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COLLABORATION IN MEDICAL EDUCATION.*

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A REVIEW of the progress of medical education in America shows it to be divisible into three epochs or stages, overlapping each other and more or less co-existent, but still sufficiently differentiated to make them enumerable, for purposes of classification, as the individual, the co-operative and the collaborative stages. These met the demands of the time, or of the locality, in which they had their being, and each was commensurate with the general educational advancement, except that medicine, emergent from theory into practice, and, latterly, with scientific investigation for its foothold, has come to make more rapid progress than any of the other so-called liberal professions.

The early settlers of Jamestown, wiser, or more fortunate, than their later brethren of Massachusetts Bay, brought with them such accredited persons for ministration to the comfort of the people in sickness as might be needed in the untried experiences of a new country; but the people of the more northern settlement had, none the less, the earnest services of good Deacon Fuller and his kind who, mixing their medicaments with prayerful thought of the service of God, made such shift as they might against pestilence and disorders, hunger-sickness and the mishaps that came to them out of the encircling wilderness.

Many gentlemen adventurers, yclept physicians and barber surgeons, like gentlemen adventurers in other walks of life, came to the new colonies as time passed on, bided a while and, finding the honey too deep in the cup for their perseverance, flew away again; but the steadier and more sober-minded men of medical attainments remained, and, finding fair wage for good labor and chances for neighborly service, cast in their lot with the new people of the New World, and became an integral part of the community.

In the beginning, therefore, all medical learning was transported from the old country in the vessels of flesh which contained it, but, when the colonies were old enough and compact enough to supply their own needs, young men nurtured, or born and nurtured, in the new world, seeking some more studious means of sustenance than that afforded by husbandry or commerce, turned to medicine as offering both social standing and a desirable occupation, and, becoming pupils of one or another of the already established practitioners, initiated medical education in America.

A sufficiently satisfactory education it was for the times, conserving the personal relationship of master and disciple to the community when personal relationship in a common cause was the bond, as a hostile environment was the bound, of the new life of a people whose voluntary separation from the homes of their fathers and the successive severance of old ties of dependence, first spiritual and then material, meant the building of a nation.

Inceptively, medical education in America was a private enterprise, subject only to personal limitations as to its character and duration. Its process consisted in the reading of a limited medical library, the collection of drugs and simples, the compounding of, often, voluminous prescriptions, in which each ingredient was supposed to have an operative effect upon its fellow with resultant synthetic effect upon the patient, the observation of cases of disease, the recording of symptoms and of the apparent results of medication, for purposes of further study and comparison.

It was a leisurely course of education, and one in which there was ample time for sedate consideration of lessons and for the gradual introduction of the pupil to the knowledge, not merely of diseases, but of the individuals exhibiting them, with whom he was eventually to come into practicing relationship.

What has been called the apprentice system in medical education had its advantages as true to-day as then, now largely lost in a more complex and more extensive curriculum, but to be in a measure restored, it is to be hoped, with the current improvement in sectional clinical teaching and the more general requirement of hospital service as a prerequisite to graduation. Twenty years ago in answer to the question addressed to a third-year class in one of our large medical schools as to what that class most desired of its instructors, the answer came, "To touch a patient," and this might well have been supplemented by "To know the doctor," for the earnest student is always eager to know what the man in practice is doing and thinking; and an inkling into the practical application of what often seems the drudgery of study, in the first years in the medical school, is an excellent stimulus.

That there was other teaching, than that from individual master to pupil, must not be overlooked, for men with the gift of lecturing, unsatisfied with the limited field of the single pupil, sought wider acreage in which to sow their thought and courses of lectures on medical subjects were instituted by many practitioners, the first forerunning indications of the next stage in medical education.

The inceptors of the co-operative stage in medical education were two men born in the same year, 1736, both graduates of American colleges, one of the College of Philadelphia, the other of the College of New Jersey; one had early the opportunity, through service in the Colonial and English armies in the French and Indian war, of measuring his attainments with those of foreign trained surgeons, and found that his acquirements were by no means commensurate with his ambitions; he therefore resigned from the service and went to Europe to study; the other, born into a well-known medical family, found his incentive in its practice and traditions, and also sought in Europe what he could not find at home.

* Read at the one hundred and seventh annual meeting of the Medico-Chirurgical Faculty of Maryland, Baltimore, April 26, 1905.

Morgan had conceived and matured, during his studies abroad, plans for the foundation of a medical school; returning to America in 1765 he found Shippen, who had three years preceded him, actively and enthusiastically engaged in private medical teaching and ready with equal enthusiasm and activity to take part in the plan set forth by Morgan in his "Discourse upon the Institution of Medical Schools in America," delivered at the public anniversary commencement of his college and in which he pointed out in detail the proposed curriculum giving their proper places to the fundamental studies of anatomy, physiology, chemistry, the natural sciences, the theory and practice of medicine, surgery and midwifery.[1]

In this discourse, and subsequently with the co-operation of Shippen, the plans were so cogently and vigorously urged that the college decided to found the medical school, and the two incentors were chosen for the important chairs of Theory and Practice and Anatomy and Surgery, respectively.

In the light of some of the present propositions in medical education, — the double degree and hospital service, — for instance, a moment may be spared to the reading of the conditions imposed in the first institution specifically devoted to instruction in the art and science of medicine in America: "The college was to confer two degrees in medicine, the bachelor's and the doctor's; as to the former it was premised that the candidates should show efficiency in the natural sciences and in Latin and that, during his studies, he should attend at least one course of lectures in anatomy, materia medica, chemistry, the theory and practice of physic and one course of clinical lectures, and should attend the practice of the Pennsylvania Hospital for one year, after which he should be admitted to the bachelor's degree; it was further provided that he must also have served an apprenticeship with some physician. To attain the doctor's degree the candidate was required to wait three years and write and defend a thesis."[2]

The bachelor's degree was subsequently abandoned, and the doctor's degree became, as it has since remained, the one and final determination, so far as the medical school is concerned, of the fitness to practice. In the perusal of this statement it is interesting to note that the value of the apprentice system was distinctly recognized, that a measure of preliminary education was required, and that one of the most important of the adjuncts to any plan of either co-operative or collaborative medical teaching, the clinical laboratory, a hospital, was already provided in the institution, founded thirteen years previously for the reception of acute cases, receiving the city poor without charge and paying patients only in the beds left over after all charity cases had been accommodated, the paying patients being allowed to employ their own physician or surgeon.

[1] J. G. Mumford, M.D., A Narrative of Medicine in America.
[2] *Ibid.*

The first medical school was speedily followed by a second, the Medical School of Kings College in New York, and it is to be noted that both of these illustrations of a new departure began with the dignity appurtenant to their being part of the highest type of general educational institution then existant and that in both the greatest stress was placed upon the value of a broad, preliminary education.

But the community soon had other things than matters of education to command its attention, and it was not until after the close of the Revolution that these schools, changed somewhat from their original construction but not from their original purpose, and still remaining a part of the college, or university, began their educational careers.

That these careers were uniformly successful and progressive, in view of the character and standing of their initial impulse, is not to be premised, the essential element in the construction of the faculties was a personal one, adjusted relationship between the courses was wanting and the friction and dissension which ensued was quite as much the result of lack of unification and of control in the system as of the natural tendency toward competition in the teachers.

The spirit of the times in the first half century after the Revolution was not favorable to unification of effort; individualism prevailed and the vaunted initiative of the new-found American supposed him to be fitted for the successful conclusion of any undertaking upon which he entered; other medical schools, with the same inherent faults in their composition as those which marked the first, came rapidly into being, some of them in connection with already existent colleges, some grouped about hospitals and others upon a purely independent foundation, all more or less subsisting upon an income derived from their students, all more or less private ventures in medical education, co-operative within themselves but not in relation to each other.

The picture of one such school is sufficiently well limned to make its portrayal stand for an example. Its inceptor, afterwards a famous surgeon, graduated from the Philadelphia school and went abroad to study, returning "with a very good idea of himself but full of useful ambition to advance medicine by teaching." At first he contented himself, like the others, with teaching private classes, but in 1817, after he had been three years in practice, he saw his opportunity and the establishment of the Medical Department of Transylvania University was the result.

"The school was, in effect, a private enterprise, as were so many in those years, and the vicious system bred its natural results. Each man wanted to conduct the course after his own fashion, and matters of precedence were found impossible of arrangement. There was no endowment worth mentioning and the school was dependent on the fees of pupils. There was little money left for the teachers; so the faculty came literally to blows. In 1819 another start

was made and for forty years the foundation survived, until, in 1859, in other times, and in the hands of other men, it was finally dissolved, the greater colleges of large neighboring towns having thrown it out of action. But for some twenty years of its youth it did a useful and brilliant work; it graduated nearly two thousand students, roughly equipped for practice, and it carried on its rolls many well-known names."[3]

Such is the picture of what may be called the formative type of the medical school, a school having for its main purpose the immediate practical end of educating youth to apply in practice that which they had been taught; incidentally, there was the stimulus to further study and to research, productive in so far as it chanced to fall upon fertile minds, but without organized outlook toward that preventive medicine which is the banner bearer of the progress of to-day.

As the private medical schools increased in number and as competition became a stimulating factor it was evident that the only road to competitive success lay in the direction of keeping the education on a level with the general advance in scientific knowledge, and, as a part of the necessary provision to that end, the requirement of better educative material and of better grading for the medically educated product.

The successive requirements of an entrance examination, of examinations during the course of study, and of a better grade of final examination for the degree, led to a grouping together of the private medical schools of the better class and their collaboration in the establishment of an advanced standard, while of the greatest importance to the general betterment, still left the inferior schools to confer, on inadequate preparation, a degree constituting a license to practice, between which and the degree of the better schools, the public had no adequate means of distinction.

That the co-operative schools were formative implies their existence as a part of a period of transition in the general educational development of a community which was learning to find itself, and their individual continuance in existence was determined by the supplanting power of an advanced educational system and their own fitness for assimilation thereby.

Of the more than one medical school for every day in the year which came into existence in the first half of the last century, more than 60% have disappeared since 1860, either by extinction or by absorption into other schools and of the remaining 166 schools, 70, or over 42%, have either begun with, or have come to have, some form of affiliation with the general educational system through collaboration with colleges or universities.

The fact that the co-operative medical school subserved a useful purpose in its time is as true as is the other fact that it is entirely inadequate to the purpose of to-day which, looking to larger issues, demands a broader educational foundation and a specialized fitting for the chosen walk in life. More than this it confidently implies the absorption of the individual interest in the collaborative whole, that rendition of self which is expressed wherever the votaries of research are at work.

Upon the basis of a limited information the co-operative school stood primarily for individualism, and the science of medicine had not then become so broad that a man might lose himself in it joyfully and exemplify Lord Dufferin's remark, concerning the German entomologist whom he found in Iceland, that he was one of those earnest students satisfied if the labor of a lifetime enabled him to add one small stone to the monument of science, even though his own name might not be engraved thereon.

It is the entrance into medicine of this actuating spirit of scientific research, that makes for the new issue, the new departure in medical education, for, with the accretion of precise information, medicine has come to be less a field for theoretic propositions; with the advance in general scientific investigation, more an exact science; the process has been cumulative, there is an accelerative progress in the application of distinctly scientific research to the solution of medical problems and the utilization of the knowledge thus gained, not merely for the relief of the individual, but for the protection of the mass.

As a natural outgrowth of this change there comes a fuller entrance of the medical profession into those sociological questions in which the doctor has always had an answering place, but rather the place of an individual worker dealing with an individual case than that of a teacher dealing with the community whole, a trustee of the commodity of human life, a guardian of its conservation to useful ends.

That the incumbent of so important a trusteeship should be carefully chosen and duly fitted for his work is no longer the charge solely of a special class in the community, it has come to be a matter of large public concern. The parts of the machinery necessary to effect the desirable purpose of placing before the community specially educated men who will be adequate to the demands made upon them as graduates in medicine are already at hand and the process of assembling them is in progress, but it will require the continued collaborate effort of the medical profession, of the universities, and of a contributive public to make a worthy product possible.

Briefly to recapitulate: Medical education in this country has passed from the period when the individual instruction of the practitioner to his selected pupil was enough; from the period when the aggregation of teachers in a medical school and the utilization of hospital material was enough, and from the period of establishment of medical schools upon broader foundations than those merely didactic and clinical, and finds itself facing community conditions which require a definite grade of preliminary education, a large establishment of laboratories in which the student may supplement his instruc-

[3] J. G. Mumford, M.D.: A narrative of medicine in America.

tion by personal investigation, and a sufficient amount of practical experience before arriving at graduation, and all this uplift within the confines of a century.

What the present century holds for medical education, those of us who are privileged to see the beginning of the new departure can, in a measure, forecast, from our witness of the later steps marking the entrance of medicine into the fellowship of the sciences, the comradeship of the general educational advance.

These steps have been, for the study, the substitution of microscopic for macroscopic investigation, the application of organic chemistry and physics to preparation, the creation of preventive medicine, the enlargement of the field of surgery, and the recognition of the importance of hygiene for the preservation of the curative power of nature; while, for medical teaching, there is its formulative adoption by the university which has itself come to have more forceful meaning as the pivotal center of our educational system, its afferents the preparatory and its efferents the professional schools.

That the road to a medical education should be made to lead through the gateway of the university was practically stated by Johns Hopkins University in the requirement of a college degree, with certain modifying provisions, as the condition of entrance to its medical department. Other universities have followed this example, and the step forward is one from which there can be no retrogression, modified it may later be, by provision for exception under a plan of certified fitness agreed upon by all the universities, or by provision for individual exception, as already made at Harvard.

The bearing of the universities themselves toward the general adoption of the charge of professional education can be no more plainly put than in the words of members of the Association of American Universities.

"By university is understood a soundly established institution of learning that is giving post-graduate or advanced instruction to its students."

"It is impossible to draw a distinction between university studies which are nonprofessional and those which are professional in their character because, in our modern institution, much of the so-called nonprofessional work of the graduate department is intended as a preparation for the calling of the teacher and much of the work of the professional schools is occupied with actual research. The problems of the different departments are so connected and interwoven that they have to be treated together in the universities themselves." [4]

"In this country the name university in the new sense is frequently applied to one department, and that is the philosophical department. A fully developed university, to be sure, includes at least four departments,— the medical, the legal, the theological and the philosophical; or, in other words, the university faculty comprises faculties of medicine, of law, of theology and of philosophy." [5]

"We must widen the implication of the learned professions; they used to be classed as medicine, the ministry, law and teaching, but now at least seven more should come under the term, the four engineering professions, and those of chemistry, architecture, and landscape architecture. That institution is not a university that does not claim all the learned professions and serve them." [6]

With so clearly blazed a trail the time does not seem far away when all of medical education in this country shall be carried on in the medical departments of universities, with such collaboration as shall provide not only for unity of plan, but for rational interchange of teachers and of students, a natural outcome being the establishment, for the graduation finals, of a distinct examining body and, consequently, the substitution of a national for the present ununiform state registration.

Of existent private medical schools, or privately endowed institutions of research, such as are capable of doing valuable specialized work, or work preliminary to advanced work in the university departments, could continue as a tributary part of the main scheme, the remainder disappearing by absorption, by affiliation, or by the process of nature's law, of elimination by power of the overgrowth.

Many of the private medical schools with large equipments, comprising school buildings, hospital privileges, teaching faculty, and an established student clientage, are quite competent to form the nucleus of a medical department to some university, some already have been, others are ready to be, so absorbed but the union should be, in all cases, one conservant of a centralizing and unifying purpose, with the university system in control.

Dangers of duplication of medical departments which may arise should be met by collaboration of contiguous universities in the formation of one medical department for both; an instance of this kind having already arisen in the case of two large universities, nearly equidistant from a populous city, which formerly had within its limits two flourishing, rival, private medical schools; one of these schools has now become the medical department of one of the universities; the other school has made propositions to the other university, which, if accepted, would have favored continuance of rivalry, but the propositions have been declined and the rational result should, and will, probably, be the formation of a combined department of medical research and of teaching with the whole clinical material of the intermediate city at command.

To adequately meet the present demands of advanced medical education the medical department of a university should have a faculty appointed upon the university basis and imbued with the university spirit, and should be able to afford places for research workers, as well as for

[4] President Hadley.

[5] President Remsen.

[6] President Eliot.

research and clinical teachers, under stipendiary conditions, putting them above the necessity of other provision for existence.

The need for this is plainly shown in the following extract from a letter written by an eminent and foremost investigator and teacher and the statement is as true of other lines of medical research as it is of bacteriology:

"As it is now I have six assistants who give a large amount of time to the instruction necessary, but they are paid but two hundred and fifty dollars a year each, and it can hardly be expected that they should give much of their remaining time to investigation. At the same time the salaries paid are all that the financial condition of the school permits, and this is unfortunate for two reasons: one because, almost as soon as these men become sufficiently well trained to be able to carry on special investigation they are obliged to leave in order to accept more lucrative work in the hospitals, or in the way of practice; the other, because, at the start it is not possible, sometimes, to get the best men to come into the laboratory at all, for the reason that they are dependent upon their own exertions for a living from the beginning."[1]

Evidently, the need is not of workers but of the means to give them a living wage. The medical profession is rich in its number of eager, earnest students who ask only that they may be kept alive in the peaceful possession of time for work, and who seek only the return expressed in the motto of Virchow, "The work is the best reward."

In addition to the laboratories for research, and for the supply of teaching material, there must be the clinical laboratories, the hospitals, under some form of definite control so far as their uses for teaching are concerned; the ideal plan being for the medical department to have its own hospital into which illustrative cases of disease may be received, as is the case at Johns Hopkins, or else to make the medical department the center of a group of hospitals, upon private foundation, but with the major staff appointments under the control of the university, as is being done at Harvard.

Under both of these plans the collaborative relationships of the intra and the extra mural, laboratories, and of the teaching body of the department, are promoted, much time is saved and instruction correspondingly facilitated.

The promotion of collaborative relationships, within the medical school itself, between its different courses of instruction, is one of the most important considerations for the future of medical training.

The tradition of the separate professorial chairs and of a successional order of subjects, a legacy from the teaching of the co-operative period, still pertains, with the result that the logical sequences in the true relationships of these studies, from the theoretical to the practical, from the elementary to the special, are insufficiently presented.

The obvious remedy for this difficulty is the establishment of cross relationships between the different courses of study and the introduction of elucidative portions of one course into another. In some instances this has been already, tentatively, done, with a resultantly stimulating effect upon the work of the students, warranting its further extension and ultimate permanency.

To make his efforts fruitful to others, the research, or the clinical laboratory worker, must have some means for the publication of that which he has achieved; for this purpose the numerous medical journals would seem to offer a sufficient opportunity, but it is to be remembered that the majority of them are self-supporting private enterprises and that the proper and necessary illustration of scientific communications is often an expensive proposition; there should be, therefore, as a part of the equipment of the medical department, a publication system through which original work of the research and teaching staff, properly supervised, edited and illustrated, could be issued at the charge, not of the individual worker, but of the department itself.

One of the striking examples of the changes in medical practice in the past fifty years is that of the creation, the growth, and, now beginning, the limitation of the specialties. Fifty years ago it was possible to graduate from one of the best medical schools in this country without having looked into an ear, seen the fundus of an eye, or even had a case of midwifery in charge; since then, these and other specialized fields of study and of practice have been exploited by general practitioners and by recent graduates who have gone to Europe for the special facilities afforded by foreign schools and have returned to start instruction of their own. The introduction of elective studies in the latter part of the medical school curriculum, one of the fruits of university collaboration, tends to define, both for the man who is to be a general practitioner and for the prospective specialist, what has heretofore been a graduate education of purely individual selection, and to put it upon its proper level in relation to the general medical education from which it has emerged. Private graduate schools have arisen in answer to the demand for information from graduates who entered practice before specialized teaching became generally accepted in this country and, while such schools have admirably served their purpose in some respects, they have been open to the objections which pertain in all forms of private educational venture. Their existence emphasizes one of the obligations of the new medical departments of the universities in the formation of graduate departments, or the grouping of special studies for graduate instruction, to which the practitioner may turn for that refreshment of his knowledge demanded by the rapidly progressive pace of medical education, and in which the elective specialist may find a definitely determined course of instruction.

The establishment of such a research and teaching plant, as that here briefly outlined, means the expenditure of a considerable sum of money, and

[1] Dr. H. C. Ernst. July 17, 1901.

its continued support means much more than the income possibly derivable from the tuition fees of students, especially since the effort made must be not to educate the largest number, but to educate most fitly. Under these conditions the one resource to be looked to, and justifiably because of the service rendered, is the liberal endowment of medical education.

The illustrative arguments, drawn more especially from the fields of public hygiene and preventive medicine, in favor of such endowment, regarded from a purely economic point of view are most convincing, and, while the service of the physician to his individual patient is, and always should be, regarded as a confidential communication to be shrouded in the mantle of silence, the public service is a matter for public recognition; through its proper presentation the citizen to whom fortune or success has accorded more of wealth than he can use, or knows how personally to apply, should be strengthened in the understanding, that in the free country which has safeguarded him, he stands as the substitute for the parental government of other states, and that there is no form of his obligatory investment for the common weal that can render so large a return as the endowment of scientific research.

The inculcation of this idea toward the formation in the community, of the *habit of endowment* for medical education, is a part of the teaching duty of that profession which gives of its life, its energy and its aspirations, but can otherwise only moderately contribute, because medicine is, and will still continue to be, in the inherent spirit of its work, and as a part of its claim to existence, the comparatively unremunerative pursuit of a public utility.

Seeking to enlarge its usefulness, striving to confer, medicine, in the equitable adjustment of the shares in public service, stands as a proper medium for the expression of citizenship; with the sustaining collaboration of the universities, with the supporting collaboration of the public assured to it, it will be free to labor on in peace, unharassed by the cares of maintenance, and work out the problems before it to their solution in uses for the general good.

Original Articles.

RESEARCH INTO THE CAUSES AND ANTECEDENTS OF DISEASE, ITS IMPORTANCE TO SOCIETY.*

BY THEOBALD SMITH, A.M., M.D.,
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MEDICAL science or the study of disease is but a part of the science of life or biology. If we possessed an insight into the entire scheme of life upon the globe and if, equipped with this knowledge, we could take our position a little beyond our earth and watch, year in, year out, with microscope or telescope the living things, we would probably come to the conclusion that disease was but an episode in life, an eddy in its current, or perhaps a normal, even necessary, manifestation of life's unceasing movements. When we come down from aloft and mingle with the human current, disease assumes a more portentous outline. It is an ever-present reality, and the annals of history and literature are pathetic records of its influence upon the mind of man.

So our opinion of disease will change as we successively view it as a factor in the entire life of the globe, in the life of the community and in that of the individual.

Medical science may approach the study of disease from one of these standpoints. Disease may be investigated from the purely biological standpoint as a disturbed equilibrium of life following change of environment. It may be studied from the standpoint of society with an eye to the political economy of health and vigor of body, or, finally, it may be studied with reference to the immediate needs of the afflicted individual. These spheres of work are not mutually exclusive, they depend on each other but they emphasize widely different phases in the problem.

These different views which we may take of disease as a factor in the life of the world need, perhaps, some illustration to make them intelligible. Nature in its various realms and subdivisions may be considered as governed by a great multitude of contending forces in unstable equilibrium. When this equilibrium is temporarily disturbed, something goes wrong with the individuals composing such realms. The difficulty becomes adjusted when the equilibrium has been restored. The gradual evolution of mankind into a higher social organism has been accompanied by continual disturbances of equilibrium both in external nature and in man himself. Among the former we may cite as familiar illustrations the deforestation of the land, the gathering of human beings into cities and the resulting smoke, dust and noise nuisances which are all creations of man himself, and, lastly, the wide dissemination of disease germs by the movements of human beings and the transportation of animals and of the products of the soil. Disturbances in the physiological organization of individual man have likewise been noted. Premature decay of teeth and loss of hair, loss of muscular power, of physical endurance, sterility, and many other abnormalities are familiar to all. It is the price we must pay for our progress, so called. It will be seen that there is, as it were, a conflict of interests between the individual and the overshadowing society of which he forms a very small part. This conflict of interests is particularly well brought out in the study of disease or the pathology of our physical existence. It has its counterpart in the study of diseases of the moral life or social pathology, likewise a result of social organization.

The true function of medical science is to study these disturbances of equilibrium between man and his environment, to anticipate them and to

*Read by invitation before the Section on Hygiene of the American Social Science Association.

suggest those compensatory movements which will counterbalance the temporary ill effects of social movements. This ideal conception of the functions of medical science is far from being realized to-day, partly because medical science itself is still in its infancy, partly because men still cling to the older notions of disease current centuries ago. The popular conception appears to be that the physician in some mysterious manner, by the application of drugs, may drive out disease. Disease is personified into an entity and its elimination regarded as an act of the doctor. But even the educated make unnatural demands upon the healing art. Many are looking expectantly for the discovery of an elixir of life which will make the old young and keep the young from growing old. Many think that if only enough money can be applied to research medicine may come to control natural laws and save us from the consequences of transgression. All that research can do, however, is to analyze more profoundly and teach us more thoroughly the natural laws which govern disease and the necessity for submitting to them.

Mingled with this medieval conception of medicine and often obscured by it is another which gained great momentum during the latter half of the century just passed. It is expressed in the simple query, What is the cause of this disease? It is slowly but surely supplanting the query: Is there any cure for this? Indeed, wonderful cures in the popular sense will be discussed with the same interest at the end of the twentieth century that characterized the discussions of the miracles of the gospel at the end of the nineteenth century. But the disappearance of the popular conceptions of cure, as reflected in pages on pages of advertised nostrums and miles of bill-boards, does not supplant the physician. His skill will no longer depend upon the mysterious formulæ he may carry in his pockets, but upon that keen, delicate touch with nature and the adjustment of hundreds of details which will put the patient in the most sympathetic relation with forces acting on him from within as well as from without. He will be more needed than ever with the growing complexity of our environment and his skill and breadth of knowledge must be proportionately greater.

The gradual analysis of the causation of disease by modern medical science is the foundation of that other branch of medicine which instead of dealing with the individual directly deals with him collectively through society or the state. As causation is indissolubly linked to the idea of prevention so state medicine is essentially preventive in its scope.

The antithesis then is between individual and social medicine, between the conceptions of cure and prevention, between superstition and science. Lest I be misunderstood it will be necessary to illustrate this antithesis in some detail.

Man is forever seeking the causes of things. A philosopher of the eighteenth century humorously named him the cause animal (*Ursachenthier*). This quest for causes is characteristic of the human mind and the secret of its physical domination of the world. If we recall any important event of our life and trace it back we are surprised to find from what slight antecedents or causes it sprang. It is easy to construct a chain of sequences for any event, one depending on the other, like the row of blocks of a child. The touch of a finger sets them all tumbling over one against the other. This interdependence of comparatively unimportant causes and great consequences has been immortalized in not a few homely proverbs.

Much the same is true when we come to study the incidence of disease. Strange as it may seem, diseases actually in progress date their beginning not from the day or hour of ill feeling, but to some earlier period. In the infectious diseases, the beginning dates from the time of infection. During the period of incubation the microscopic parasites are laying their mines whose explosion opens the actual illness. In other grave maladies, especially of later life, the beginnings are insidious, the appearance of the disease often only a crisis or an explosion in a long concatenation of events. It is in the diseases due to microorganisms that come from without that the chain of sequences is often easily traced owing to the great advances made by medical science in recent years. In pursuing the chain of events leading to disease, medical science reasoned thus: If we know that such and such events, antecedents, or causes lead to such maladies we must interfere with these antecedents, we must break the chain. But the great task was to find the chain. Its links were almost wholly buried. Only here and there one was accessible; some were too strong to be broken. Gradually, medicine unearthed more links that could be broken, and today the infectious diseases are so well under control because of the many links broken by science. A single block taken from the row interferes with the child's game. So it does in the dissemination of contagious diseases.

We might use another simile. The phenomena of life may be compared to a network of threads in which we occupy the points of intersection. Entangled in these meshes which appear to grow more complex each year we are exposed to the attack of disease traveling along these lines from many quarters. Medical science endeavors to trace these intersecting lines back as far as possible, and break them wherever it finds a weak spot. If we were endowed with the sense of telepathy we would hear many a click where sanitary science is breaking a thread that was carrying disease to our door.

In the intricacy of modern life, prevention is likely to be imperfect. The state as represented by its legislature may refuse to pass necessary laws, and the appointed official may through indifference execute them in a lax way. Hence the necessity for finding means of arresting diseases which cannot be absolutely prevented. For this purpose, medical science is pursuing this chain of events into the body of the patient with the hope that something may be done to inter-

fere with the progress of the malady that could not be prevented. Hundreds of students are at work to-day in the laboratories of Europe and our own country endeavoring to discover how the body gets well, what the chain of events is which leads to recovery. If this can be analyzed into its elements, may it not be possible to provide the physician with a weapon which will cut the thread and stop the momentum of the disease? Medical science has been successful recently in providing such means for one dreaded disease, diphtheria.

Even in the ordinary, every-day ailments not due to micro-organisms, the doctrine of causation lies at the bottom of the most successful treatment. Accepting the definition that disease is largely due to disturbances of equilibrium between ourselves and our environment the best physician tries to find out one by one these disturbances that have led to the diseased condition. These are removed whenever possible. He does not cure the abnormal condition due to them, but by removing the causes he affords abused nature the opportunity to act normally, or even assists nature to hurry along recovery. There is a remarkable power inherent in life to re-establish a normal condition when the pressure has been removed. There are few things in biology so wonderful as this. How important then to find out what is interfering with the proper relation between us and our environment.

If we examine this conception of disease as a series of sequences or causes coming to us from without and continuing within us to recovery or death, we find imbedded in it another most important fact. It is this, that it becomes more and more difficult to stop the momentum of disease, or if possible to stop it, it requires more and more energy to do so the nearer it approaches us from without, the longer we wait after it has attacked us. It is like something rolling down an inclined plane or like the little mass of snow which gathers into an avalanche on the mountain slope. It is much easier to check the entry of a virus into our body than to stop its momentum when once there. It is far simpler to provide a pure water supply than to alleviate the misery and pain, and face the irretrievable losses of an epidemic. For many of the most serious diseases we can check the dissemination by comparatively simple means, but when they have been neglected the only thing that can be done is to rely upon the healing power of nature under the guidance of the best physicians. We can prevent infectious diseases if we will really and earnestly set to work to do so, but we cannot always prevent death in those once infected.

The collective dealing with the causes of disease whose radiation in many directions is readily prevented when once those causes have been recognized has another virtue which is worth considering. It is infinitely cheaper to prevent than to treat disease. The burden entailed upon society in the care of the sick is excessive. It involves not only the savings of the poor, but the health and strength and often the life of those upon whom the task of nursing may fall. On the other hand the burdens due to the machinery of public medicine are slight and borne by all in proportion to their means. It matters not how promising remedies and cures may be, a little examination will show that they are expensive and that the means for their application are largely provided by public-spirited citizens in the form of charity. Only a comparatively small number of sufferers can be reached by them owing to insufficient means for applying a costly treatment. Individual medicine depends really upon a surplus of energy in the world. When in the distant future that shall have been exhausted only public medicine will survive.

There is still one other thought hidden in this conception of dealing with the sequences leading to disease as near their ultimate source as possible, — it is futurity. We interfere with the causes leading to the ills of to-morrow, for those of to-day we must endure. The physician prepares to-day for any possible relapse which may threaten his patient to-morrow or next week perhaps. We permit ourselves to be vaccinated to acquire a resistance that may not come into play at all. The physician administers antitoxin for a sore throat even though he is not yet certain that it is diphtheria, because he thus gains a precious twenty-four hours.

The apparent antithesis between cure and prevention with which we started out in our discourse does not turn out to be real. The same methods are pursued by the physician scientifically trained and the sanitarian. All are working under the same laws. All try to stop the process of disease some where in its course. The sluice gates may easily divert a stream near its sources in the mountains, they may be applied with equal skill to the swollen torrent in the lowlands, but frequently without avail. The physician has the more difficult and trying task and many times the laws of nature block his path.

Medical science must continue its work of analyzing more and more minutely all the phenomena that go to make up disease. For by this continual analysis we learn where we may gain control of the future with the least effort and the greatest chances of success. No amount of intuition, and speculation apart from the study of the thing itself can assist us. When the human species left the plane of animal life and bade farewell to instinct, its controlling guide, the only other thing to do was to reconstruct life through reason by the most thorough analysis possible. Our only protection from disease is in the most exhaustive study we can make, and the more complete our knowledge of its mechanism the nearer we shall approach complete control.

This work of analysis is being pursued with much patient observation and experimenting. Insight cannot be gained, analysis of phenomena is impossible, without experiment. Much criticism has been bestowed by people of culture, refinement, and often of the highest standing, upon medical science on account of experimentation upon animal life. They are, however, either

uninformed of the necessary trend of science and its objects, or else wholly out of touch with them. Medical science cannot take any backward step, for the survival of the human race itself depends upon its successful adaptation to a changing environment which must be thoroughly understood. Our well-meaning antivivisectionists may claim with some show of reason that sooner or later the proper equilibrium will be restored without the aid of medical science. But the sacrifice of life would be appalling under such a *laissez-faire* régime; it would reduce our population to the number of the aboriginal savages where civilization would have to start anew, and only with individuals who by neglect have become immune to all the ills that nature may provide.

Whether the human race could survive the onslaught of all the micro-organisms of disease without the erection of artificial barriers is to me highly questionable. It is true that the lower types have survived in different parts of the world, but we forget that the germs of infectious diseases had their special homes just as the valuable and noxious plants and insects had their different centers of origin. With growing intercourse, each original center of population, immunized through centuries and perhaps thousands of years to its own few diseases, would be brought in contact with some fatal plant of another portion of the globe, and be partly swept away by it. Only with the aid of medical science has man been able to overrun the globe with more and more speed without at the same time bringing back with him the germs of fatal diseases. What would become of our population to-day if smallpox, cholera, the plague, typhoid, and the children's diseases were allowed to run riot? The critics of experimental medicine do not appear to realize that the knowledge how to control these diseases comes only by the most persistent analytic experiments. It is something of an anomaly to see a small body of people, all of them thoroughly protected by the silent workings of medical science and moving about with perfect immunity, some of them perhaps never ill, never in danger, living to a good age because of the protecting wall medical science has built around them, moving annually upon our State House to induce the law-making body either to prohibit medical science, or, if that be impossible, to police and license it as we do our dram shops.

The same method of work characteristic of medical science has been adopted in other fields of human activity and I refer to them here simply to show that if medical science is on the wrong path, it is not traveling alone. Perhaps the most encouraging sign to those interested in the welfare of their fellow beings is the adoption of this method in philanthropic work. Indiscriminate almsgiving has been almost wholly replaced by a rational scientific study of causes, and by the giving of aid only so far as to place the beneficiary into harmony with his environment. The causes of social discontent and poverty are being investigated on all sides, and the simple palliative of evils is received with less and less patience by thinking people. The remedy for bad citizenship is placed where it should be, upon the education of the young. The chain of events starts early in life and the emphasis is now placed there where it belongs.

The conception of causation and its corollary, prevention, is on the whole so simple, it pervades our daily life to such an extent, that it seems strange that in the province of disease it should not be accorded its proper place. That medical science should concentrate its attention upon something that may happen to-morrow instead of wasting valuable time upon what has happened to-day and what cannot be recalled seems strange to most of us, and yet it is the essence of all successful dealing with disease. In this sense the best physician is sanitarian first, and dispenser of medicines afterwards.

If the true work of medical science is to trace the antecedents or causes of disease, these are sufficiently varied to give employment to minds of widely different attainments. These causes are to be sought for in our hereditary characters, in our present and past activities and in our environment. One of the most potent group of causes to which I have merely alluded is to be found in the realm of micro-organisms. It is of interest to note that civilized man who has subjugated or annihilated all species of large animals, finds the difficulty of controlling and suppressing them in inverse proportion to the size of the offending species. Many predatory and destructive insects which disturb agriculture are still at large, and many of the microscopic and ultra-microscopic organisms which cause disease baffle the scrutiny of science. With this study of micro-organisms is bound up the phenomenon of parasitism, one of fundamental importance to all life. Parasitism implies a continual struggle between the highest and the lowest forms, and the investigation of the conditions which surround this struggle will be for some time to come the most fruitful field for research. Parasitism is not an unknown phenomenon in the social and political life of mankind, but here we observe the curious fact, that the parasites belong to the same species as those who support them. Among lower forms of life and especially in the causation of disease the parasite stands at a much lower level than the host. We may, of course, say that the political parasite lives upon the "organization" rather than upon the individuals composing it, but to the tax-payer this distinction would not be very convincing.

The political parasite is but one of a great variety of species. We have others, such as the tariff parasite, the rebate parasite, the franchise parasite, and so on. Without going farther in this tempting comparative study, we may state that there is much in the phenomena of infectious diseases which suggest certain pathological states of the social organism, and I believe that much mutual assistance could be obtained by an occasional interchange of ideas and theories between the student of social and the student of biological pathology. On many an occasion I have received

encouragement and suggestions in the study of microbic warfare by noting what would happen if microbes were men and men, microbes.

So far I have dealt with the pure science of medical research. In order that this pure science may become useful to society it must be applied to the every-day conditions of life. The working out of general biological laws governing disease is of fundamental importance, but it must be supplemented by the labors of the physician, the health officer, the teacher and the parent. This brings us to a brief consideration of the ethical bearing of applied medical science. Pure science as such is not concerned with ethics. Its object is to grasp and explain those forces which are working upon the body from within and without. The moral element is not introduced, the great discoveries have no ethical value until applied by us for certain ends. This daily application of new facts and theories concerning disease influences our moral life, both as individuals and members of the family, and as component elements of a larger social organism. Let us look at these in turn very briefly.

With clearer insight into disease processes, the duties of each one of us in behalf of health and against diseased conditions become more definite, and our privilege to be sick correspondingly curtailed. Under the earlier point of view the patient was the main and sole object of attention in his affliction, and while this may still be true, increasing knowledge has placed upon all a certain duty to avoid the known steps leading to disease. Not only does some responsibility rest upon the patient himself, but modern sanitation steps in to protect the patient's family and neighbors in case of infectious diseases. No longer is he the sole object of attention, but the community, the state, the public health, as it were, sees to it that the well are protected and that the patient does not unwittingly cause damage. The segregation of disease is not a new idea of the nineteenth century, for it has been practiced since the lepers of early Scriptural times were made outcasts. It stands, however, in the foreground of preventive medicine to-day. I do not wish to imply that this shifting of the center of gravity from the patient to a point beyond is necessarily accompanied by less interest in the unfortunate, for at no time have the sick received greater care than to-day. It is simply one of those readjustments necessitated by our progress in insight.

The newer views concerning the causation of disease and the desirability and necessity of maintaining a normal existence may lead, as all new movements do, to an overestimation of mere health and bodily vigor. Health at all hazards may easily become a bulwark behind which to shirk our responsibilities. To-day social judgment is rather lenient upon this point, for health or an over-development of physique, which is often taken for health, is at present among certain classes something of a fetish which dominates and to a certain extent causes atrophy of more important faculties. Its influence is only too evident in the abnormal and militant athleticism of our higher institutions of learning.

Our relation as individuals to the social organism in matters pertaining to our physical welfare is in many respects made very complex by continual changes in this organism. Our health is very largely dependent on a certain environment with which we may regard ourselves in equilibrium. If this is disturbed disease may follow. With the growing complexity of society and the greater interdependence of its members our personal control over our environment becomes more and more restricted. The air we breathe is vitiated by dust, smoke and gases over which we have no personal control. The food we eat is infected, manipulated and adulterated without our knowledge. The beverages we consume unboiled may be highly charged with noxious bacteria. The public conveyances we most move about in may be peopled with dangerous diseases. Our homes may be invaded by poisonous illuminating gas and asphyxiate us. We might continue indefinitely this recital of the slight personal control the social being has over his environment. With the rise of hotels, tenements and densely packed hostelries of all kinds in our large cities to take the place of the family home we have practically abdicated much of the power we possessed over our surroundings.

The evils which have arisen to threaten our health are of two kinds. There are in the first place those which are the natural results of changing environment. They are the price we pay for the newer conveniences and luxuries of life. Though they may be mitigated, they cannot be eradicated. We must be content, for example, to live in less pure air than our forefathers did if we must live in the heart of large cities. Our sedentary occupations cut us off from so much physical exercise each day. Our muscles atrophy and it hardly pays to keep them fully developed when strength is needed for other purposes. We must learn to balance conditions, and to choose between two kinds of environment, for we cannot have both.

The other class of evils are such as have slowly arisen on account of the initiative of individuals and groups of individuals in exploiting nature for personal gain, and in exploiting the ignorance and credulity of their own kind. These evils appear in the vitiation of air, food and drink, the sale of injurious drugs and so on. But it would be wrong to assume that all those agencies which tend to injure us are the result of pure greed and malice. Many of the processes which are health-destroying have been undertaken in a happy-go-lucky manner without any thought of their final harmfulness. This may have been especially true in a relatively young country like ours. To cut down the forests was in the beginning a necessary act and a salutary process in draining the soil and preparing it for human dwellings. But the process has long passed this stage and is now threatening. Many of the difficulties with which society has to cope have grown offensive, and dangerous owing to an intensification of the processes at work and to the denser population

affected by them. To what extent the equilibrium between ourselves and our surrounding has been disturbed by social evolution the three words: noise, dust and smoke, bear witness. Noise is largely a product of civilization. The savage who can apparently endure a lot of it had but few means of making it. The civilized man makes plenty, but is far less able to endure it. Dust is likewise something invented by civilization. Nature knows but little of dust. It clothes all bare places with vegetation and thus binds the soil together into a compact mass. The highway and the street of to-day represent the chief dust manufacturers. The constant attrition of perishable fabrics adds a not insignificant factor. Smoke was likewise a rare thing in nature, limited to volcanoes and the occasional effects of strokes of lightning. The use of fire for man's benefit is now universal; with it came smoke and soot.

Occasionally conditions formerly regarded as injurious have lost much of their bad reputation through research. Some twenty-five years ago, a factor entered to disturb the comfort and peace of city life. It was the alleged infectious character of sewer gas. Since then much legislation has become encrusted about this alleged fact and a costly system for preventing sewer gas from entering our dwellings has been built up, known to us as sanitary plumbing. But slowly the tooth of time and careful investigation have eaten away one by one the privileges of sewer gas to produce various infectious diseases. To-day it would be difficult to state just what sewer gas actually does to injure health.

These few illustrations clearly indicate the intricacy of the situation in which the individual finds himself. Everything is in motion and change. Not only must medical science determine the relative noxiousness of processes new and old, but after this has been fairly determined, we must make a choice between the good and the evil in such processes. With many these are so balanced that only the special student can be trusted to speak the deciding word.

It is needless for me to say that very grave responsibilities rest upon the student of disease problems in view of this situation. Not only should his work be done with the greatest skill and insight, and the application of medical science to industrial and social problems be based upon the most accurate and reliable information available, but he must in the face of niggardly compensation maintain strict integrity. Already the powers who aim chiefly for gain are beginning to see that the public is trusting science and confiding in its results and they are quietly attempting here and there to ally themselves with pure science and have its devotees unwittingly act as sponsors for their activities. It would indeed be a calamity if this should occur, but the mere possibility emphasizes the need of such public support of our growing medical laboratories that, like the courts of justice, they may be wholly above temptation to betray truth on the one hand and society on the other.

In conclusion let me briefly recapitulate the thoughts which I have presented so imperfectly. We have seen that the study of causes and antecedents is of fundamental importance in medicine as in other departments of human inquiry. The knowledge of causes leads to the treatment of them rather than of their effects. Our efforts are thereby directed largely to the future rather than to the immediate present which simply registers the effect and is frequently beyond help. We have seen that for society to control causes of disease is infinitely less burdensome than to try to palliate effects. This preventive medicine is really the medicine of the social organism, the people's medicine, as contrasted with the treatment of the individual which often requires resources beyond our reach, because the momentum of disease to be resisted has become so great when it has once manifested itself in the individual. Over and above the task of studying disease is the one which applies the results of such study to everyday life. With this application, ethical problems appear. Science merges into art and practice, and the student of medical science must share responsibilities with all those whose function it is to watch over the welfare of the individual and of society and to harmonize their frequently conflicting interests.

THE IMPROVEMENT IN THE TREATMENT OF DIABETES MELLITUS.*

BY ELLIOTT P. JOSLIN, M.D., BOSTON.

The improvement in the treatment of diabetes in the last ten years is undoubted. This statement is made after comparing the records of the Massachusetts General Hospital from 1824 up to 1898,[1] with somewhat more than one half the same number of cases which have been seen in private practice during the last seven years. An attempt will be made to point out some of the reasons for this improvement, and some of the measures which have been adopted to bring it about.

SUBSTITUTION OF FACTS FOR GUESS WORK.

The substitution of facts for guess work can be placed first of all in importance. The first quantitative examination of the urine for sugar at the Massachusetts General Hospital was made in 1852 by Dr. Bacon, but the adoption of the quantitative analysis did not come into use until many years later. Indeed, the statement is to be found in the records of 1866, in the handwriting of one of the present professors in the Harvard Medical School, that the urine tasted sweet. Since any comparison of the good or bad effects of treatment depends in great part on the knowledge of the amount of sugar in the urine, it is obvious that the advance coming from such a definite knowledge is great. It furnishes a fact, discour-

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Professor Naunyn of Strasburg and Professor Pfaff of Boston have been so helpful to me in the care of my diabetic patients, that I wish to record my appreciation of their work, and my indebtedness to them, before entering upon the subject of the evening.

[1] R. H. Fitz and E. P. Joslin: Diabetes Mellitus at the Massachusetts General Hospital from 1824 to 1898. A Study of the Medical Records. Journ. of Amer. Med. Asso., July 23, 1898.

ages guessing, and is another step in the destruction of medical superstition. The fermentation test for the percentage of sugar is so easily performed, that the number of physicians who fail to make use of it should be small.

Of almost equal importance is the examination of the twenty-four-hour quantity of urine, instead of a single specimen. This method, though in practice for some years by a few physicians and at the hospitals, is still not generally enough employed, but the recognition of its importance is widespread.

The Ferric chloride test (Gerhardt's reaction) was sought for in but 22 of 172 cases at the Massachusetts General Hospital, between 1824 and 1898. It is needless to remark that acetone and diacetic acid are at present constantly sought for in diabetic urines, and the method of treatment to a considerable extent regulated by their presence. The information derived from these tests alone undoubtedly leads to the prolongation of the lives of many diabetic patients, but more of this later.

The knowledge of the amount of carbohydrates in the diet of diabetic patients was *practically* unknown ten years ago. The only attempt to determine the amount of carbohydrates in the food of diabetic patients was then directed to the exposure of the starch in gluten flour, and I venture the statement that few practitioners knew that bread contained at least three times as much carbohydrates as potatoes. It is obviously a great gain that to-day it is quite generally known that bread and cereals contain 60% + carbohydrates, potatoes and bananas contain 20% + carbohydrates, grapefruit and oranges contain 4½% to 10% carbohydrates, cream and milk contain 3% to 5% carbohydrates.

It is thus seen that the number of unknown and variable factors ten years ago which entered into the decision as to the proper methods of treatment, and the conclusions drawn from the same, were enormous.

THE DETERMINATION OF THE TOLERANCE FOR CARBOHYDRATES.

A knowledge of the fermentation test and of these few food analyses enables any one to strike a rough balance between the outgo of sugar in the urine, and the intake of sugar and starch in the food. The general medical practitioner is thus in a position to decide whether, (1) the patient assimilates a portion of the carbohydrates eaten; (2) excretes an amount of sugar equal to the amount of carbohydrates in the diet; or (3) excretes more sugar than is contained in the carbohydrates in the diet. In other words, the tolerance for carbohydrates can be easily estimated in each case, and a means is afforded to determine whether the patient is gaining or losing ground. This is the essential factor. This procedure is easily applied at home by any doctor, who then can decide for himself whether a food or drug does harm or good.

Patent medicines and waters, drugs of the regular pharmacopeia and proprietary foods are thus made to stand upon their own merits, and not on the ignorance and credulity of the doctors or their patients.

The physician by the more accurate knowledge of the severity of the disease becomes less easily discouraged in its treatment. The determination of the tolerance in diabetes is analogous to the examination of the lungs in tuberculosis. One cannot expect to arrest the case of diabetes in which the tolerance is less than *nil*, any more than a tuberculosis process which has reached the cavity stage.

METHOD TO BE PURSUED IN INCREASING THE TOLERANCE.

When once the tolerance of the patient has been determined, the next step is to increase that tolerance for carbohydrates. How is this to be done? The law which serves as a guide is an old one, — rest to the diseased part leads to improvement in the same. This holds as well for diabetes as for ulcer of the stomach. Rest to the diseased function in diabetes means first of all the withdrawal of carbohydrates from the diet, thereby lowering the metabolism of sugar in the body. A sugar-free urine is essential to a gain in tolerance.

Preliminary treatment to render the urine free from sugar. — It is generally acknowledged that if the urine can be rendered sugar free, and held so for a few days, as a rule the sugar assimilative function of the body recovers some of its lost power. This is well illustrated by a table of von Noorden's [2] in which the gain of tolerance after a strict diet is shown. Thus one patient, who secreted 33.8 gm. sugar at the beginning of the strict diet when 100 gm. bread was added to it, was sugar free at the end of sixteen days, when the bread was again given.

In the mild class of cases it is not necessary to put the patients upon an absolutely strict diet to make the urine sugar free. In the cases of medium severity this is necessary, and the strict diet [3] must often be kept up for one or two weeks, and sometimes longer, before the sugar leaves the urine. The goal is always a sugar-free urine, because it is only when the urine is sugar free that the curative part of the treatment begins. In the severest cases, strict diet, *i. e.*, the total expulsion of carbohydrates, does not suffice, and recourse must be had to one or more expedients to get the urine free of sugar. Indeed, these expedients are often adopted from the start from preference.

These expedients are, *first*, the reduction of the quantity of the strict diet to such a point that the patient just barely holds weight, or loses even five pounds. Weintraud's famous case of severe diabetes, which lived five years, got along on 10%

[2] Zuckerkrankheit, 1901, p. 192.

[3] The following diet list in use at the Boston City Hospital may be taken as an example of strict diet. In reality this is not a carbohydrate free diet, because most of the vegetables, which it includes, contain approximately 3% sugar-forming material.

Strict diet: Meat, fish, eggs, cheese, butter, coffee, tea, clear soups, gelatin, spinach, cabbage, cauliflower, string beans, lettuce, celery, tomatoes, radishes, asparagus, water cress, mushrooms, cucumbers, onions, olives, lemons, dandelions, pickles. Eat at least 3 eggs, 1 salad, 1 tablespoon olive oil, 3 vegetables and 2 oz. butter each day.

to 20% less food than ordinary individuals. Kolisch, Talma, Löhning, have all recently called attention to the fact that it is much more difficult to get a patient sugar free on a diet with high caloric value, than on one which in nutritive value just meets the patient's needs. Professor Chittenden's recent experiments, in which it was shown that health and weight could be maintained with low caloric values, may indicate that Weintraud's patient did not constitute an exception to what have been considered the laws of metabolism, but was rather in line with them. But if the limitation of the total quantity of food does not produce the desired result, the *second* step must be taken, namely the limitation of the quantity of albumin. All writers agree that the glycosuria is increased by albumin, and practically all recommend that the total quantity allowed be restricted. Five hundred grams, approximately one pound of cooked meat, which is equivalent to 1¼ lbs. of fresh meat (all albumin being reckoned in the form of meat), is the maximum allowed. This amount can be diminished as low as one half this quantity for short periods, and the total quantity of albumin permanently kept at about 100 gm. This second procedure in the vast majority of cases suffices to make the patient sugar free. If it does not, the *third* resource is in a vegetable day, or more strictly a day upon which fat and the allowed vegetables of a strict diet are taken together with coffee, tea, beef tea and alcohol. Such a diet is one practically free from albumin as well as carbohydrates, and really consists of fat, cellulose and extractives. There have been comparatively few instances in my experience in which such a measure did not suffice to rid the urine of sugar. Occasionally this fails, and then refuge is sought in the *fourth* expedient, — the starvation day. This sounds heroic, but it is not, and it is not modern. The patients seldom get very hungry, never experience discomfort, and always regain the weight lost in a few days. Its adoption will make practically any patient, temporarily, at least, free from sugar. On this day, water, beef tea, broths, coffee, tea and alcohol are allowed. As a rule, however, a strict diet alone, if long continued, will finally rid the patient of sugar. Over and over again I have almost despaired of attaining this end, only at the expiration of a continued strict diet to find the urine sugar free. The four expedients above enumerated are, therefore, seldom necessary, but often desirable, because by their aid the result is more quickly obtained. It is a very simple matter to lower the quantity of food in the diet, by no means difficult to lessen the proteids, and I have repeatedly advised and had patients carry out vegetable and starvation days at home.

The administration of carbohydrates. — When once the urine has been freed from sugar, the patient should be kept upon the same diet by which this has been attained for a few days to a week, or longer. In case a starvation day has been required, this should be followed by one or more "vegetable days" or "low proteid days." The clinician in such instances must constantly balance between the good effects of the restricted diet and the effect which so much food of a similar and unappetizing nature will have on the patient. Here is room for discrimination, tact, and perhaps most of all for plain, hard work in arranging the best possible diet under the circumstances.

The most useful carbohydrate food to add to the strict diet is cream. It is four times as nourishing as milk, is palatable, and a small quantity goes a long ways. Usually a patient who has been sugar free for a few days will bear half a gill of cream at once, but one can often profit by the patient's pleasure in the increasing doses of cream, and instead begin with one teaspoonful and add another teaspoonful daily. One can rarely do better than to raise the quantity little by little up to half a pint — an amount sufficient to make the strict diet tolerable to the patient, and yet not enough for satiation. The next step in the treatment of a case of diabetes, which always has in mind increasing the tolerance, is the determination of the form in which carbohydrates can further be added.

Milk cure. — It has been known for a long time that in rare instances a pure milk diet was useful in diabetes. Donkin was the first to call attention to this fact. One striking case of this sort came to my attention. The patient on an exclusive diet, containing about 150 gm. of milk sugar, excreted practically no more sugar than when on a diet free from carbohydrates. But cases like this are most rare, and are apt to do much harm, for they give rise to the impression that a milk diet is good for all cases. The explanation of these cases has given rise to much speculation. An exclusive milk diet is to a greater or less extent an undernutrition diet, and as has been said, such a diet lowers the glycosuria. This can be but part of the reason. Another reason lies in the fact that a single variety of carbohydrate is better born, than is an equivalent quantity of different carbohydrates, *i. e.*, 100 gm. of carbohydrates in the form of milk sugar are better borne than 50 gm. of milk sugar and 50 gm. starch. But this again does not hold good for all diabetics. It is well, therefore, to bear in mind that occasionally a patient may have a remarkable tolerance for milk, but a universal milk treatment for diabetes is absurd. The recent talk about milk has given rise to the idea that in the modern treatment of diabetes the carbohydrates are less restricted. This is actually true, but it is absolutely not true in the sense that the modern treatment is less vigorous and active in striving to keep patients sugar free.

Potato cure. — Mossé's potato cure owes its virtue probably in part to the same principle, the administration of all the carbohydrates in one form, and also to the fact that potatoes contain but one third as much carbohydrates as bread. Mossé, however, ascribes its action to the water and potassium salts in the potatoes. In the cure, 1, 500 gm. potatoes are given to the patient for a period of several weeks, instead of

bread. The number of men who favor the potato cure is far less than the number who favor the use of milk.

Oatmeal cure. — v. Noorden's oatmeal cure depends definitely on the principle that carbohydrates in one form will cause less sugar to be excreted than when the same amount is given in several varieties. The total quantity of albumin is also kept low. The author distinctly says that the oatmeal cure does not work well in all cases, and publishes cases which support this view. Like the milk and potato cures its action must be closely watched. It is far less agreeable than the two previously mentioned modes of treatment, and cannot be continued over two weeks at the most. It does not promote tolerance for other kinds of carbohydrates. Two hundred and fifty grams oats are cooked with water and 100 grams albumin, and into this mixture 300 grams of butter are worked. A soup is thus made, and this is taken by the patient every two hours. Brandy, wine and black coffee are also allowed. It is plain, however, that the diet is not a palatable one, and one not likely to be much employed. But there is something that oatmeal suggests which will be found useful. One heaping tablespoon of dry Quaker Oats (14 gm.) contains about one third of an ounce of carbohydrates. When cooked the tablespoonful swells to half again the size. A tablespoon of cooked oatmeal therefore contains but a very small amount of carbohydrates (7 gm. or ¼ oz.), and so is available if the patient has gained much of any tolerance. As breakfast is one of the hard meals for diabetics, this small quantity of oatmeal is a welcome addition.

To return to the patient who has become sugar free, and whose tolerance has become equal to half a pint of cream. My suggestion would be instead of attempting milk, potato, or oatmeal cures, to add a tablespoon of milk day by day to a diet, the total caloric value of which is low, and the amount of albumin not over 100 gm. By this means the milk and cream in favorable cases in two or three months may reach one quart. If the tolerance has grown to this extent, it will probably be found perfectly safe then to allow half a grapefruit — a most welcome addition. A recent analysis of grapefruit by my assistant, Dr. Charles L. Overlander, showed it to contain 4.5% sugar, while sweet and sour oranges contained respectively 9% and 10%. If this is tolerated, the next most useful addition would be the tablespoon of oatmeal. But a diet as liberal as this cannot be considered much of a hardship. So large a quantity of milk allows infinite variety. In such cases, even for many months, it is a good plan from many points of view to prescribe a nearly strict diabetic diet for one day each week.

If tolerance is not gained, it is seldom possible to maintain the patient's strength and weight for long intervals on a diet which contains less than one-half pint cream and some sort of fruit, as for example, an orange. Occasionally a stay of two or three weeks in a sanatorium is helpful because of the freedom from care of the diet. A vegetable day once a week is advisable. An increase in the quantity of fruit, the addition temporarily of milk or potatoes or oatmeal may be necessary. In my opinion the allowance of bread is seldom necessary in those cases which have dieted strictly for over six months. Even if it is allowed, the reappearance of the appetite is but temporary, and is distinctly offset by the harm which results in other directions. A patient educated for six months or one year to the strict diabetic diet sees the harmful effect of bread and prefers to do without it.

THE CHANGE FROM A GENERAL TO A DIABETIC DIET.

Two thirds of a healthy man's food is sugar and starch. That healthy peope are upset when they radically alter their diet is a matter of every-day experience, and it is a self-evident proposition that invalids can form no exception to this rule. Pawlow's work shows the reason for this. The diabetic diet further is on the whole an indigestible one. These two reasons are, therefore, enough to indicate that a gradual change should take place between the general diet and the diabetic diet. Except in unusual cases there is no need for haste. Common sense points to a slow change. But there is still another reason why the change should be gradual. The removal of the carbohydrates gives rise to an increase in such acid bodies as acetone, diacetic acid and *B*-oxy-butyric acid, and this increase is also favored by the added quantity of fats consumed, which are the source of these substances. The patient naturally eats more proteid food, too, under such conditions, to counterbalance the loss of two-thirds of his diet, and these also contain other acids. While the acids in the body are thus being increased, first, by the withdrawal of carbohydrates, second, by the extra amount of fat, and third, by the proteids eaten, at the same time the available store of alkali is diminished by the withdrawal of many vegetables. Acid intoxication thus may easily arise and diabetic coma may be precipitated. A diet slowly changed is far more rational and safer because the body accommodates itself to the new conditions and the increase of acids is not so great. It is always wise, however, to give a teaspoonful of bicarbonate of soda two or three times a day as a precautionary measure, and to watch the patient and the urine closely for danger signs. Diarrhea must be avoided as much as constipation. The sudden deaths of diabetic patients on entering hospitals and after long journeys can in many cases be prevented by such patients keeping their previous diet unchanged on their entrance to the hospital, or throughout their journey, with the addition of a little soda.

FAT IN THE DIABETIC DIET.

A diabetic diet is really an ordinary diet in which the carbohydrates are replaced by fat. It is necessary for the diabetic individual to eat two to five times as much fat as usual. Comparatively little of this fat can be taken as meat, and this necessitates the use of much cream,

butter and oil. The diabetic's chance for life depends upon his ability to eat fat and consequently great care must be exercised not to prejudice him or even ourselves against its digestibility. It is well to remember that fat is very well digested as a rule if taken in the form of milk-fat or oil. Not over 5% remains unassimilated, and this rule holds good for diabetics except in one of those most rare cases of marked pancreatic disease. Some nations drink olive oil, others use it in place of butter, and patients with hyperacidity of the stomach bear it well and take it to great advantage. Children are proverbially good fat takers. With confidence, therefore, order an increase of butter and olive oil — but order it gradually. Remember the patient is to have the disease for the rest of his life, and that there is no need for haste. Have the fat concealed in the cooking. Instruct the cook or some other member of the family how to work it into vegetables. Do not talk about it before the patient. A teaspoonful of brandy will settle a meal rich in fat.

DRUGS.

Drugs do not permanently increase the tolerance for carbohydrates. Circumstances may arise in the course of diabetes just as in any chronic disorder when they are indicated, but there are as yet no specific remedies.

THE TREATMENT OF COMA.

The treatment of coma lies in its prevention. Mention has already been said of the danger in a sudden change from an unrestricted to a rigid diabetic diet. It is a safe rule to always proceed slowly in any diabetic changes when the urine shows the ferric chloride reaction, and at the same time to give one teaspoonful of bicarbonate of soda three times a day. If the patient's spirits remain good, and there is neither restlessness nor dullness, and the quantity of urine diminishes gradually as the carbohydrates are lowered, little fear need be entertained even if the diacetic acid reaction is present to a marked degree.

At the first untoward sign let up, however, in the diet, and add to it a pint of milk, which should be taken in small quantities. At the same time favor the elimination of the acids by giving water with the milk, or alone, or water with bicarbonate of soda. Unless there is immediate improvement in the symptoms, a diet composed exclusively of milk in one form or another, or gruel, must be adopted temporarily. At the outset bicarbonate of soda can be given in one teaspoonful doses each hour, but very soon this interval must be lengthened or the dose decreased, as the stomach will rebel. Thirst is apt to be marked, and great care must be used not to gratify it to such an extent that the stomach becomes overloaded, and dilatation and paresis of that organ occur. It is comparatively easy to have the soda and liquids taken by the patient, the difficulty lies in their retention, and it is far better to err on the side of giving too little than too much. Great caution should be exercised in the administration of cathartics. The soda is only too apt of itself to cause diarrhea, and I have come to rely on enemata as the safest procedure.

A TREATMENT ROOM FOR EPILEPTICS.

BY EVERETT FLOOD, A.M., M.D., PALMER, MASS.,
Superintendent Massachusetts Hospital for Epileptics.

The idea of establishing a special room for the treatment of such conditions as are the most troublesome among the chronic epileptics came from seeing the need of doing something to satisfy the patient and his friends. This motive, though not the most worthy in its inception, was adequate to the purpose and has proved not only politic, but wise in every other respect as far as tested.

We had a large number of persons who had at home been accustomed to dosing and coddling, and looked upon these processes as necessary. If they failed to have a careful examination from top to toe and to be put on a course of medicine, they considered the management inefficient and their stay here not worth while. Their friends were always promptly informed by the patient of these delinquencies and letters of admonition and complaint were sure to be sent us.

To see the apparently able-bodied man or woman persistently complaining of all sorts of symptoms and as constantly declining to exert himself was unsatisfactory. The results to the patient were not in the line of advance. All of these disabilities are not removed by our new methods, but we find them applicable to some of the troublesome conditions, and in this proportion helpful.

We had a large room in the first floor of the infirmary, partly basement, but mainly above the grade, which was available, and we have gradually fitted this with some very simple homemade apparatus. There are a toilet room and an anteroom adjoining, which give many needed facilities for disrobing and for making examinations and records, a locked cabinet for the instruments and supplies.

In the larger room there is an ample fireplace so that a cheerful fire helps during cool weather to perfect the ventilation of the room and to attract the patients to spend an hour here rather than under other influences.

A good granolithic floor was made, as the other work was going on in several different rooms. This floor was made by a patient who had no experience or knowledge of the special process further than what he gained by watching some hired workmen lay a laundry floor. He went on pretty slowly, but with a good deal of encouraging and assistance in establishing grade lines, etc., the floor was actually made in a presentable fashion and in the most durable. The expense for extra thickness of cement was somewhat offset by the diminished cost for labor.

Some low tables and one high one were made for rest and massage; a shower where any temperature of water may be obtained was installed;

scales for ascertaining correct weights; a supply of water with magnesium hydrate for drinking; thermometers for room temperature; a telephone that the operator might not be called out when busy and suitable chairs and carpets for making a comfortable appearance. The main feature of the room, however, was a large wooden cabinet, also homemade, in which a patient may sit and be tightly shut in with doors having the head protrude at the top. The cabinet is fitted with 100 electric lights of 16 candle-power each. There are ten switches with ten lights on a switch so that the heat and light may be applied as moderately as desired. The registering thermometer protrudes from the top and can be conveniently observed while the patient is undergoing the heating process.

The routine procedure has been to select those patients who are about to have series of epileptic seizures, with a view to warding off the approaching attacks, those who have rheumatic pains and stiffness, the asthmatic, those who have attacks of paramyoclonus just when the "shakes" are commencing, those suffering from insomnia, those suffering from auto-intoxication as evidenced in any way, and those who demand treatment as an inalienable right.

We have the patient, under the care of a nurse, disrobed and then covered with a light blanket. He now takes his seat on the stool inside the open cabinet; facts as to pulse, temperature, blood pressure, respiration, weight, etc., are noted and a sample of blood for blood count taken and diluted ready for use. The cabinet is now closed and the main switch being turned, ten lamps are turned on with one of the smaller switches. Usually ten in each corner, forty in all, are used as a beginning and the other sixty added as fast as the patient gets accustomed to the heat. He very soon begins to perspire. The heat is kept on varying periods from ten to twenty minutes or until the patient has had a thorough sweating and a half pint of perspiration has dropped to the towel on the floor.

If the patient is feeling perfectly comfortable, no hurry is felt about getting him out of the cabinet. If he begins to feel faint or uneasy, the lights are turned off and the doors opened. He is then stood, or wheeled in a chair, under the shower and the water at a comfortable temperature turned on. After a full washing, he is rubbed dry, and, wrapped in blankets, is laid on couches for a few minutes' rest,

The observations as to pulse, blood pressure, etc., are now taken again (though in many instances we have also taken the blood pressure the second time while the sweating is at its highest). Another sample of blood is prepared. Duration of the treatment in the cabinet with the temperature when the heat is turned off, must also be recorded at the proper time.

Out of 30 cases, all were agreeably impressed. They had various methods of expressing approval, *e. g.*: "It's all right." "Seems as good as going swimming." "I enjoy it." "I feel like sleeping." "Feels comfortable." "Think it fine." "Feels comfortable as if I could go to sleep." "Everything seems soft."

The degree of blood pressure varied in every case when treatment began. The lowest was 125°, the highest 195°, the average was 165°. The pressure, when treatment terminated at the end of from ten to twenty minutes, was at the lowest 110° (the same case in which it was the lowest at the outset) and at the highest, 190°, the average not far from 140°. The pressure, forty-five minutes after treatment ended, was at the minimum 125°, the maximum 200°, an average of about 163°. The record was down, then up, in all cases but seven. Of these seven, the record was up, then down, in five cases. In two it was down, then down further.

In the instances where the blood pressure went against the rule, the respiration and temperature varied less markedly than in the others and in two of these, the respiration remained unchanged. In two it diminished. The pulse jumped from 60° to 140° and from 90° to 150° in two.

Temperature varied not over 2° in any of these seven cases.

The respirations increased in nearly all cases, reaching 36 per minute in one case, 30 in one, and in all others, not passing 24.

The pulse was accelerated, reaching 150° in two cases, 140° in one, 130° in one, 120° in two. In all others, it remains less rapid than this, and in all it gradually returned to normal in about an hour.

The temperature under the tongue was up, then down, in all cases. The highest temperature noted while in the cabinet was 105°, two were 103°, one was 102°, and one 101°; all others below 101°.

Mitral regurgitant murmurs appeared in almost every case, lasting during the sweating following the hot air, but disappearing within an hour.

The average temperature of the cabinet was 165°, the lowest 135°, the highest 190°.

A blood count was made in each case. The effect as to red corpuscles seems to have been *nil*. A larger number of observations will, perhaps, show some results. As to white corpuscles an increase was manifest in every case examined. The average increase was 1,000, *e. g.*, from 8,000 to 9,000 per cubic centimeter.

The whole procedure appears first to dilate the whole vascular system with a gradual return to a better condition than existed at the outset, to give tone to the muscular arterial coating, and to aid the return lymph flow; both functions which are of great importance to the final well-being of the encephalon.

Several minor results which may become of major interest developed.

A patient who was too timid to take the cabinet treatment wished to have some share in the new room and was given gymnastic and breath-

ing exercises. She stood with her back against a rigid, straight support, and, with shoulders well back, inhaled and exhaled to her fullest capacity, breathing very slowly and resting after each full respiration.

After a week a male patient was induced to attain the same results by using a bush scythe and cutting brush. He had never before acknowledged that he was able to work.

One of the most interesting features of the room is an electric dental engine. Teeth cleaning is the main part of the work, though we fill some cavities with soft filling. The cleaning is done for every patient, even the dements, but with those who are capable, we give instruction as to the care of the teeth, the use of the tooth brush, etc., and in some cases find it the best arrangement to keep the tooth brushes in suitable holders in the treatment room.

The opportunity for admonitions of many kinds was not wasted, and we soon found that these bits of wisdom were not only useful to the patient, but also interesting so that we did not often lack an audience. An hour could always be passed to advantage, and whenever the room was in use, either at the regular appointment, or at any irregular time, a few patients eager for points would assemble. At each sitting, some special point was especially dwelt upon, *e. g.*: Advice as to time of retiring at night; the sponge or shower bath with vigorous rubbing, when and how often taken; eschewing medicine, a point very difficult to establish; exercise, and mainly the kind that would work the muscles of the upper extremities; resting in bed without sleeping, if sleep did not come, as many were found anxious if they had failed to sleep the entire night; daily, regular work; cessation of all complaints; conversation about diverting and cheerful subjects; keeping the feet in a glow by frequent immersions in water and vigorous friction with a dry towel; discipline as to keeping the temper. None of these talks failed of some good after result.

This suggests a method of treating patients in groups which seems promising. The idea is to set off a small group of persons with a competent caretaker who shall be a guide, companion, teacher, friend and physician.

A light lunch, in accordance with a pre-historic tradition, is served to the laundry helpers, and as some of these people were used during off minutes for determining blood pressure, etc., it was convenient to ask them to bring the lunch along with them. Immediately this was used as an occasion for giving instruction as to conservative mastication.

By experiment, we re-discovered the oft-repeated maxims as to the number of chews to each bite of different foods.

It would be difficult to summarize all the results of this work so far as carried out. We simply offer these few expedients and hope to see in our own hands and in other institutions when due time has elapsed, some definite and further attainments.

Massachusetts General Hospital.

CLINICAL MEETING.

At the May, 1905, meeting the following papers were presented:

AN UNUSUAL CASE OF TUBERCULOSIS IN AN INFANT.

BY CHARLES W. TOWNSEND, M.D.

Tuberculosis is a very common disease in infants, but the following case presents such interesting problems in diagnosis and etiology that it seems worthy of record:

The infant, the second child of exceptionally healthy parents, always lived in the best environment. The family history is good in the direct line, all being healthy and long lived. The only cases of consumption in the family are remote and in collaterals.

The infant, weighing 9 lbs. at birth, was breast fed until it was seven months old, when it was weaned on to cow's milk modified with cereal water. The cow's milk was of the best, from dairies whose milk was used especially for infants, and whose cows were frequently tested for tuberculosis. The infant received no other food. At the age of nine months, just before it was taken ill, it weighed 20 lbs. 6 oz. It had always been a healthy, happy, vigorous child with rosy cheeks and firm flesh, and it had never been ill. During the two weeks prior to the attack of vomiting and fever which ushered in the fatal illness it had gained 1 lb. 3 oz. Its appetite and spirits were particularly good at this time. In other words, there was no prodromal stage of debility or anemia.

The initial symptoms were sudden fever and vomiting, lasting a day, but recurring several days later. The baby became fretful, ground its teeth frequently and rolled its head from side to side. Although there were no catarrhal symptoms and no acute pain, it was thought best to have an examination made of the ears, in the hope that their condition might explain the fever, which had now became continuous.

Dr. E. A. Crockett found a slight otitis media of one ear and punctured it with the escape of a thin serous fluid. Later he punctured the other ear, and, as the first closed up, this was again opened. There was evident relief of the symptoms, the head rolling stopped and the infant slept all night, but the fever continued unabated. Several times, later in the course of the disease, the ears were examined by Dr. Crockett, but nothing abnormal found, so that otitis as a cause of the fever was ruled out.

Another cause for obscure fever was sought in the condition of the kidneys, but several examinations of the urine showed nothing abnormal. The blood was also examined. The Widal test was negative, there were no plasmodia of malaria, the number of leucocytes was within normal limits, and there was no anemia. In this way several other causes of fever were eliminated. Frequent physical examinations by several consultants as well as by myself during the whole course of the disease showed nothing abnormal. The lungs and heart were negative, spleen and liver were not enlarged; there was no dilatation of the stomach, and, aside from a varying and rather increased amount of gas in the intestines, nothing abnormal could be found in the abdomen.

The fever varied irregularly from 100° to 104°, and was often higher in the morning than at night. Several times the temperature sank for a few hours to normal, once or twice becoming subnormal. The

general course of the fever was lower during the last two weeks of the disease. At the end, however, it mounted rapidly above 106°.

After the ears had been attended to the infant appeared to have but little acute pain, although it often moaned a great deal, and almost never smiled during the whole course of the disease. Its mind remained clear to the last few hours, and its strength and will power were unusual. When it was emaciated to the last degree it persisted in desiring to be sat up, and it would then vigorously hold up its head and sway it from side to side. Until the last its pulse was strong.

The infant's digestion as shown by the stools was good during the whole course of the disease. Smooth, yellow movements of perfect consistency occurred even when the temperature reached 105°. Vomiting was at first only occasional, perhaps once a day, and the amount of food retained was sufficient. During the last month vomiting and especially disinclination to take any food became prominent features, but at no time was there vomiting of large amounts of mucus or of food. Bile was often vomited. In other words, there appeared to be no evidence of intestinal or of stomach indigestion, or of accumulation from pyloric stricture, and it was believed that the vomiting was reflex from the fever. Thorough evacuations with calomel and careful management of the diet with the idea that there might be obscure ptomaine poisoning had no effect on the fever. As a rule the vomiting was most frequent when the temperature was highest, although there were exceptions to this rule. During the last two weeks the infant was fed by enemata, an ounce and a half of peptonized milk every four hours. These were well retained until the last, and seemed to be the chief support of life, as the infant took and retained almost nothing by the mouth. After an illness of over nine weeks the baby, emaciated to a skeleton, died.

To sum up, we have here the case of an exceptionally large and healthy infant of good inheritance and environment, suddenly taken sick with fever and vomiting. The unexplained fever continues for over two months and ends in death. During all this time nothing is found on physical examination with the sole exception of a serous otitis during the early weeks of the disease. This is relieved by puncture and does not return. The diagnosis of a septic fever due to germ infection seems the only reasonable one, and, although tuberculosis was considered, infection by some other organism seemed more probable. The autopsy by Dr. Oscar Richardson whose report is appended, showed extensive tuberculosis in the abdomen.

These questions naturally arise: Why should a healthy infant with good environment and heredity suddenly be stricken with tuberculosis; What was the source of the infection, and where the point of entrance?

AUTOPSY IN DR. TOWNSEND'S CASE.

BY OSCAR RICHARDSON, M.D.,
From the Clinico-Pathological Laboratory.

DR. TOWNSEND'S case is of interest in that so grave a disease process, although practically localized within the peritoneal cavity, should not give more manifestation of its presence and, further, that the disease process itself should be so peculiarly localized and of such unusual character.

The autopsy showed the body to be that of a male infant, about twelve months of age, exceedingly well developed but emaciated. On making the primary incision it was at once noticeable that the peritoneal cavity had been practically obliterated by a dense layer of grayish white, firm tissue which more or less completely surrounded the abdominal viscera, binding them roughly into one mass. The organs of the body were then removed *en bloc* with preservation of their continuity and later, but with great difficulty, the abdominal viscera were finally freed from the investing layer of tissue and the character of the disease process made out.

The thoracic cavity and its organs can be dismissed with a few words. The pericardium, heart and great vessels were not remarkable, the pleural cavities free from fluid and the lungs free from adhesions. The lung tissue on section presented no areas of consolidation and showed nothing whatever abnormal, except for the presence in the tissue of each lung of two minute, yellowish nodules rounding up just beneath the pleura. They were about 2 mm. in diameter and on microscopical examination proved to be minute foci of caseous pneumonia. The bronchial lymphatic glands on section showed nothing abnormal.

The abdominal viscera on section presented the following conditions:

Liver: The organ was surrounded by the layer of tissue previously referred to which attained here a thickness of 1 cm. in places. The substance of the organ was fairly firm and presented a yellowish rather homogeneous section surface. Microscopical examination showed marked fatty metamorphosis of its tissue, but no areas of tuberculosis. In places the investing thickened layer of tissue about the organ encroached slightly into the liver substance.

Spleen: Other than for the investing layer of tissue which microscopically extended in places a short distance into its substance the organ was not remarkable.

The pancreas, adrenals, kidneys, ureters and bladder, on section, presented nothing abnormal.

Section of the stomach showed a normal appearing mucosa, but on laying open the intestine the mucosa at the lower end of the ileum presented in two or three places very small, shallow losses of its substance with slightly ragged edges. The mucosa was not remarkable otherwise.

The peritoneal surface of the intestine was generally coated with a thick layer of grayish white, firm, in places fibrous-like, tissue which bound the coils of the intestines together, but without occluding them. The omentum was lost in the investing layer of tissue about the organs. The mesentery was thickened and showed in several places small, grayish yellow masses which on section consisted of firm homogeneous, caseous-like tissue resembling that of tubercular lymphatic glands. In the situation of the superficial ulcers in the mucosa of the ileum previously mentioned the small masses of caseous-like tissue are closely applied to the peritoneal coat of the wall of the intestine, and on stripping the investing layer of tissue from the peritoneal coat of the intestine many rather large tubercle-like masses were disclosed dotting the surface here and there.

Microscopical examination of sections of the investing layer of tissue in the regions of the various organs showed it to consist of sheets of fibro-cellular tissue surrounding large areas of homogeneous eosin-staining material, the marginal portions of which showed many hematoxylin-stained fragments of cells, apparently portions of disintegrated nuclei which in places were margined by epithelioid-like cells. In other places there were areas of eosin-staining tissue where the forms of the dead cells could be faintly distinguished. No giant cells or definite tubercles were found.

A section stained with carbol fuchsin and decolorized with 3% hydrochloric acid showed rather numerous typical tubercle bacilli.

Sections of the wall of the intestine and the caseous lymphatic, gland-like masses in the mesentery showed in places foci of epithelioid-like cells with smaller and larger areas of caseation and a few giant cells, and resembled the ordinary histological picture of tuberculosis.

The case thus resolves itself into an infection with the tubercle bacillus probably through the intestinal wall in the region of the superficial ulceration. The character of the lesions produced place the case in that group in which the tuberculous process spreads rapidly throughout the peritoneum forming a thick fibro-cellular layer with caseous masses throughout its substance and closely applying itself about the viscera but with little if any production of tubercular lesions within them.

ELEPHANTIASIS FROM LUPUS — LARGE SPORED RINGWORM.

BY J. T. BOWEN, M.D.,
From the Ward for Skin Diseases.

Case I. Elephantiasis from Lupus. A woman of thirty-two, the subject of a very extensive lupus of the left leg, accompanied by elephantiasis of the part. The whole left thigh and leg were enormously hypertrophied, having become more than twice the size of the other leg. There were deep-seated tubercular infiltrations, which had assumed circinate and serpiginous figures, common on the extremities. There was naturally much scar tissue and in places a very deep pigmentation. On the left cheek there was a typical patch of lupus which the patient said had made its appearance when she was one year old; had quickly gained its present size and remained practically stationary ever since, despite treatment at various times by caustics. An interesting feature of the case was the occurrence of attacks of erysipelatous swelling, or lymphangitis in the affected leg. These had occurred only during the last few years, since the elephantiasic condition had developed, and were characterized by a marked rise in temperature and constitutional disturbance.

Case II. Large Spored Ringworm. A man of thirty-five, a herder, from a town in the western part of Massachusetts. During the winter a skin affection, attended with loss of hair in spots, had affected a few of the cattle. About two months previously, his present affection had started upon his left forearm, the region of the beard being soon after involved. He now has several large, raised, circular lesions, of papillomatous and suppurative character on the left forearm, and the submaxillary region on both sides is the seat of enormous lesions of a similar appearance, deeply seated and of a marked "Kerion" type. As would be expected from the clinical appearances the microscope showed the presence of the tricophyton ectothrix, the large spored species so common in animals.

REPORT OF THE MEDICO-MECHANICAL DEPARTMENT.

BY MAX BÖHM, M.D.

I herewith present a report of the medico-mechanical department of the Massachusetts General Hospital during its first year of existence. It is not my aim to give a description of the technical or physiological basis of this method, but to illustrate, by means of the cases that came to the new department, the affections and diseases that can be favorably influenced by its use. This question is naturally of the greatest interest and importance for the practitioner.

As I desire to give an account of what the new method is capable of doing and what not, I have endeavored to classify my cases as accurately as possible.

FRACTURES.

Spine,	2		
Upper extremities:		Lower extremities:	
Finger,	10	Metatarsus,	2
Metacarpus,	5	Tarsus,	5
Carpus,	5	Pott's fracture,	22
Colles' fracture,	60	Lower leg,	19
Forearm,	11	Knee,	1
Elbow,	25	Femur,	4
Humerus,	8	Patella,	2
Shoulder,	8	Neck of femur,	2
	134		57
Ununited fractures,	4	Total fractures,	195

A great many of our cases were cases of fracture. Old fractures differ widely from each other not only in the type of the fracture, in the deformity, in the overproduction of callus, in the atrophy of bone, and in the location of the fracture, whether in the middle of the bone or near a joint, but also in the time elapsed before the beginning of treatment. These factors cause among the different cases varying prognoses and do not allow us to look at all fractures from one general statistical point of view.

In recent fractures, that came from the surgical department under my care immediately after taking off the fixation apparatus, we were able to restore the entire function in a very short time. Thus the cases of typical Colles' fracture got well in eight days on the average, and the typical Potts' fractures in ten days. The fractures of joints that came early under treatment have been equally benefited in a very short time.

I wish to emphasize especially the results reached in fractures of several years' duration with extensive stiffness in several joints.

Finally, I will mention two cases of ununited fracture of short duration, the one of the neck of the femur, the other one of the finger, in which union was obtained by mechanical stimulation of the nutrition and irritation of the fragments. Another case of this kind is now under treatment.

I am fully aware, that in the mechanical treatment of old fractures we can do nothing outside of the physiological lines. To be sure, good results are partly obtained by the old methods, but the mechanical treatment is the quickest and most agreeable means of restoring the function in the after-treatment of fractures. Again, in the treatment of old fractures with extensive secondary stiffness the results were unattainable by the old methods. I have as proof for this assertion the statement of the surgeons of the Out-Patient Department, who have kindly sent me the cases. To-day, when the ability of earning one's living is considered one of the highest gifts of man, a treatment that brings to a minimum the time occupied to obtain the working function cannot be too highly estimated.

CONTRACTURES.

Cutaneous and subcutaneous,	14
Tendinous:	
Tenosynov. sept. chron.,	37
Rupture of tendon,	6
Volkmann's (ischemic) contract,	1
Dupuytren,	1
Periarthritis,	24
Bursitis,	19
Arthritis:	
Septic,	15
Gonorrh.,	17
Chronic rheum. (inf.),	9
	143

In the first group I wish to consider only as a type the cases of cancer of the breast which after operation remain stiff and have inability to use the arm.

The second group contains cases which after sepsis and operations on the various soft parts, mostly tendons, have as sequelæ inability to use the fingers, hand, arm, or foot. A large percentage of these cases were septic of the hand. These cases are especially helped and give great promise of the complete restoration of function.

In the next group are those cases with contractures depending upon periarthritis, bursitis and arthritis. The success of the mechanical treatment in these cases depends upon the number, seat and strength of the adhesions. In these affections manipulations under ether are mostly used at present. Now it does not show the ability of a physician, if he neglects for the sake of one method all the others; but there can be no doubt, that in the greater part of the above cases the same result can be reached by gradual mechanical treatment without ether and with the least possible amount of pain.

I am fully convinced that in at least three fourths of all these cases mechanical treatment will do not only as much, but even more than can manipulation under ether.

DISEASES OF THE JOINTS.

Acute sprain,	16
Chron. sprain,	20
Arthritis chron. (rheum.) inf.,	32
Arthritis rheumatoid (atroph.),	3
Osteo-arthritis hypertroph.,	19
Arthritis chron. urica,	2
Arthritis tbc.,	6
Arthritis luet.,	1
Osteochronditis desiccans (König),	1
Derangement internal (knee),	3
Neurosis of joints,	7
	110

It is unnecessary to mention that acute joint diseases cannot be treated by mechanical means. A part of the diseases to be treated by our method which belong to this class have already been mentioned. These are the cases of arthritis chronica infectiosa. In those cases we can do much in removing the exudates, in strengthening the muscles and increasing the nutrition of the joints. The combination of our system with the hot-air treatment is especially effective in those cases. In the cases of chronic-progressive diseases of the joint, osteo-arthritis deformans, hypertrophica and arthritis rheumatoidea atrophica, our method has only a symptomatic influence. Of the three essential symptoms of these diseases, the pain, the weakness and the stiffness, the last is the most benefited. This is of great value, for instance, in those cases, in which affections of the finger joints prevent the hand from being closed. The tubercular affections need to be treated with special care as there is danger of breaking up quiescent conditions in joints by too early treatment and again starting the process. A syphilitic case with serous exudate into both knee joints brought good results in conjunction with specific treatment.

DISEASES OF THE SPINE AND THE MUSCLES OF THE BACK.

Sprain (spine, muscles, fascia),	25
Myositis chron. rheum. (lumbago),	5
Osteo-arthritis chron.,	13
Weakness of back muscles,	12
Ant. post. deformities,	20
Scoliosis functional,	18
Scoliosis osteogen.,	23
	116

AFFECTIONS OF TENDONS AND MUSCLES.

Tenosynovitis chron. traum.,	6
Trigger finger,	1
Chron. rheum. affect. of muscles,	6
	13

CHEST DEFORMITIES.

Tunnel chest,	3
Chicken breast,	2
	5

STATIC FOOT CASES.

Flatfoot beginning,	16
Flatfoot contracted,	3
	19

Nowadays, sprains of muscles and of joints are generally treated at their outset by massage and motions, instead of by fixation, and we employ the same principle in acute sprains of the muscles and the fascia of the back. In out-patient cases, to be sure, we apply supports to give them the possibility of walking and working; but this treatment is only palliative, whereas the proper treatment would be to restore the function of the back by mechanical treatment in combination with the support. The same is to be said about the frequent infectious type of disease of the back (lumbago).

In the third group, that of osteo-arthritis of the spine, some cases can be treated symptomatically.

The majority of cases of deformities of the spine have always been subject to the mechanical treatment in its various old forms. The so-called functional deformities of the spine, in the antero-posterior or lateral direction which, as far as science has gone to-day, have their origin in weakness of the group of muscles about the spine, or in continuous asymmetrical carriage of the spine, are frequently found in the above statistics. The cases that result primarily or secondarily in structural alteration of the vertebræ, as far as I could determine by exact measurements, cannot be

influenced seriously by the means we possess to-day, at least not in the orthopedic line. By removing the symptoms, such as pain, weakness and stiffness, good results can, however, be obtained.

Orthopedic surgeons are especially interested in the problem of scoliosis and all the diseases that belong to this class. The shortcomings of our treatment are chiefly due to the lack of a rational insight into its actual nature. The first aim of our work must be to give an exact and thorough picture of the mechanism and clinical appearances of this complicated affection. The naked eye is neither exact nor is it practiced enough, and so we need very delicate apparatus for records and measurement. As our department possesses a complete set of such apparatus we are especially called upon for a serious study of this disease. Above I have added some statistics of some other orthopedic cases, in which our treatment is of value.

INTERNAL MEDICINE.

Lungs:	
Pleurisy,	5
Empyema,	1
Heart:	
Defective compensation,	8
Myocarditis,	11
Neurosis,	1
General weakness,	9
Anemia,	4
Habitual constipation,	17
Enteroptosis,	4
Obesity,	8
Diabetes,	3
	71

While the application of mechanical treatment has been frequent in orthopedic and surgical cases, the foregoing statistics show the rarity of medical cases. This is somewhat surprising because, now, heart diseases, for example, have turned in a great measure from pharmacological to physical therapeutics. The reason for so few cases is that our material is mostly from out-patient departments, the patients of which are not able to go through a long course of treatment. The medical patients have come mostly from the wards of the hospital.

NERVOUS DISEASES.

Neuritis,	7
Sciatica,	5
Supra-orb. neuralgia,	2
Peripheral paralysis,	6
Musician's cramps,	1
Spastic wryneck,	3
Poliomyelitis,	9
Myelitis,	3
Dystrophia muscul.,	1
Hemiplegia,	12
Infant. hemiplegia,	7
Chorea,	1
Paralysis agitans,	6
Coccygodynia,	1
Neurasthenia and hysteria,	27
	91

For peripheral paralysis and hemiplegia the same is to be said as for after-treatment of fractures: All that we can accomplish is along physiological lines, and this can be done in the shortest possible time by our method of treatment; secondary contractures can be prevented. Paralysis agitans admits sometimes of a symptomatic treatment that gives temporary relief to stiffness. The cases of cerebral paralysis in children are greatly helped by long, persistent treatment. These cases are not so hopeless as are generally considered. The overcoming of spasm, the working out of those muscles, that are not entirely paralyzed and the restoration of the co-ordination are the chief purposes of our treatment. In the cases I have had to deal with, some of which had lasted several years, I can show an encouraging improvement.

Fractures,	195
Contractures,	143
Joint diseases,	110
Affections of spine and back muscles,	116
Affections of tendons and muscles,	13
Chest deformities,	5
Static foot cases,	19
Internal medicine,	71
Nervous affections,	91
Total:	763

The aim of this report is to give some statistics of the cases treated during the past year. I regret that it is impossible for me to give the numbers and dates concerning the success of the treatments, because a great number of the patients abandoned the treatment before a cure was complete. Thus it is only a smaller part of the records of patients that show the condition of the patient at the time when he left. This obliges me to give personal impressions instead of numerical statements.

I hope that I have succeeded in giving a general idea of the indications and contra-indications for the treatment as well as the results that can be reached. These results are such as to allow us to call our method a valuable addition to therapeutics. Concerning the question, whether or not this method fills a lack in therapeutics, I should like to point out in which way many patients of the out-patient department have been and are now being treated. After removal of the bandage, splint, or plaster of Paris, or after the wounds are healed, the patients are generally discharged as cured. But such patients, as a rule, are not cured in a functional sense, inasmuch as it may be impossible for them to use arms, hands, feet, or legs, so as to go about their work. The doctor, for this reason, suggests, on leaving the hospital, the use of the limbs or the joints as far as is possible. But how many do this? How many don't on account of lack of energy or intelligence? How many do not do it on account of pain, and how many are not able to do it at all on account of physiological conditions? Right here we have an explanation for the enormous number of those patients who after injuries of the extremities are crippled and unable to work. How much can early treatment prevent this? How much even for the latter can be done by a systematic therapy? If the new department at the Massachusetts General Hospital treated only those cases above

mentioned, its existence alone would be justified; and yet as the statistics show these patients are only a quarter part of the patients treated. These facts already are known to the laity as the increasing number of the patients shows. It seems to me that after practically a year's existence the foundation of the department is solid enough.

The future points out two special tasks for us. One is practical: To improve our system in the technical line. The other is a theoretical one: To study scientifically especially those diseases in which we can show but little success now, for example the deformities of the spine.

LATE RESULTS OF FRACTURE OF THE PATELLA AT THE MASSACHUSETTS GENERAL HOSPITAL.

BY WM. C. QUINBY, M.D.

LAST fall letters were sent out asking all the cases of fracture of the patella which entered the hospital between the fall of 1898 and that of 1903, a period of five years, to return. These were about 75 in number. Of this number 30 responded, 28 in person and 2 by letter. Of this 30, 6 were treated without suture, while in the remaining 24 there were 26 sutures done, 2 cases having a double fracture. With one exception all were recent cases, that is, they entered within a week of the injury. In 9 of these sutured cases a second operation was done, seven times for refracture and twice to remove the wire put in at the first operation. A brief table will be of service.

Unsutured, 6 cases.

			Per cent.
Result	Perfect,	3	50
	Fair,	1	16.5
	Poor,	2	33.5
Serviceable knees,			66.5

Sutured, 24 cases, 26 operations:

Result	Perfect,	17	65.5
	Fair,	5	19
	Poor,	4	15.5
Serviceable knees,			84.5

Cases in which voluntary extension and flexion were normal (180°–35°) with perfect function, and not over 1 cm. muscular atrophy of the quadriceps, were classed as perfect. Those where flexion was possible to a right angle or a little less, and in which there was no limp or trouble in walking on the level, were classed as fair; while those who could not flex to a right angle and who limped or became easily tired on the level and had to use a cane or go upstairs one step at a time, were classed as poor.

The cases which are of most interest are the poor results and those in which refracture occurred, so we will consider these in detail.

Of the 2 cases of poor results following fixation, each gave histories of direct and indirect violence; both factors of *blow* and *tear* entering into their causation. This is the so-called "combined" class of Mickulicz, in which he says that besides the fracture the lateral ligaments (the so-called parapatella) are always torn, and in which he always operates. One case has 10 cm. separation of the fragments and an almost useless knee. The other has 5 cm. separation with much lateral mobility of the knee joint, so that the leg feels insecure. Both of these cases would probably have done better by suture.

Of the poor operative results there were 4. One of these was an old fracture of twenty-seven years' standing, with 10 cm. separation of the fragments on entrance. He now has but 3 cm. separation, but does not consider the knee as useful as before operation. One was a recent fracture, seen a year after operation. She had evidently neglected exercising the leg, being very apprehensive lest it break again. With proper medico-mechanical treatment this case can undoubtedly get at least a fair, if not perfect, result. The remaining 2 poor results were in cases of refracture. One of these cases was a railroad fireman who broke his patella a year ago and again three months later. Apparently, through a misunderstanding as to the directions given him, he wore a ham splint for six months after the second operation. The other was a second fracture, two years after the first, since which an elastic stocking has been worn and both knees are full of hard and soft crepitus.

So, of the poor results 2 should have been sutured; 2 were from lack of proper after care; 1 was an old case with great separation of the fragments; and 1 was due, in part at least, to a marked hypertrophic process which was present in the uninjured knee as well.

The cases of refracture, 7 in number, are also interesting. One was in a boy who broke his patella at seventeen years of age; six years later he broke it again. In neither instance was his patella sutured. Although he has 2 cm. separation between the fragments the function is perfect, and he has held the world's record for 3 continuous standing jumps (41 ft., 5½ in.).

All the remaining 6 were sutured at the first break. In 4, silver wire was used; in 2 gut. Why refracture should follow the use of silver wire twice as often as it does that of gut is not clear. Possibly this is not true and is due to our dealing with too few cases. The refractures following silver wire suture happened at three months, four months, five months, and one year after the first operation. Each of the 2 refractures after catgut suture was about one year later. The results of the operated refractures were: 2 perfect, 2 fair and 2 poor.

In the consideration of any series of cases such as these, there are two main sources of error, of which we must not lose sight. The first is the danger of drawing too fine deductions from too little material. The second lies in the fact that a patient with a poor or unsatisfactory result is more apt to report at the hospital than one who is well. In the long run this factor cannot but make the unfavorable results too numerous in proportion to the good ones. It is wise, therefore, to make no more definite statement than that of impressions received. They are as follows:

(1) In the large majority of operated recent patella fractures the result is extremely good,

about 85% at least, getting perfect or serviceable knees.

(2) Though undoubtedly excellent results are sometimes obtained by the fixation treatment, since they must always depend on the integrity of the lateral ligaments and fasciæ, and since, when the knee is first seen, it is very hard to say just how much these have suffered, it would seem that in the absence of any special contra-indication to operation, such as nephritis, etc., all recently fractured patellæ should be sutured.

(3) The suture material in order of choice would seem to be, first silk and then stout chromic gut. Silver wire is probably unnecessary in most cases. It may cause subsequent discomfort or abscess and have to be removed, and from our results there is a suggestion at least that refracture is more common after its use.

(4) Great care should be taken to get accurate approximation of the torn lateral ligaments and fasciæ as the lateral motion in the joint caused by their laxity or non-union gives a limb in which, though flexion and extension may be normal, there is always a feeling of insecurity.

(5) A very accurate measure of the function of the leg is the presence or absence of atrophy of the quadriceps group of muscles.

(6) Joint crepitus is common in the operated cases, though it is usually of the soft variety, and as a rule causes little or no limitation of function. It is probably due to a hypertrophic process in the synovial membrane, caused by some slight chronic irritation such as would follow an unevenness of the bony fragments on their articular surface. That it may be of probable rheumatic origin in some instances is shown by the case of a woman who concurrently with an attack of tonsillitis had pain, redness and tenderness in both knees. Both were full of hard and soft crepitus, the injured knee, however, being just as serviceable as the uninjured one.

In conclusion, I wish to express my indebtedness to Dr. Böhm, who first suggested this investigation and who gave me much kind assistance in examining the cases.

A CASE OF CONSERVATIVE TREATMENT OF ARM INJURY.

BY WM. C. QUINBY, M.D.

I am indebted to Drs. J. Collins Warren and J. W. Elliot for their kindness in permitting me to report the following case:

Man, twenty-seven years, was brought to the accident room of the Massachusetts General Hospital, Dec. 30, 1902 with the following story:

While putting a belt on a pulley in a shoe factory, he caught his right arm and was thrown over the shafting.

Physical examination showed radial pulse at wrist, and hand warm. Heart, lungs and abdomen were negative. There was a compound fracture of both bones of the forearm 1½ inches above the wrist joint, with extensive laceration of soft tissues with pieces of muscle and tendon hanging from the wound. The hand hung by whatever soft tissues remained on anterior aspect of forearm. Bones were denuded for 4 to 6 inches. Besides this there was a compound fracture of the humerus just above the middle of the shaft, with an opening in the skin one inch long, on outer aspect of the arm, through which the lower fragment protruded. He was in slight shock.



Schematic representation of original condition of arm after injury.

At the operation both radial and ulnar arteries were found intact. After cleaning up the wound as much as possible and cutting away all the torn and lacerated muscles and tendons, the radius was wired. Its periosteum, however, was so badly torn that it could not be approximated. The bone, therefore, was left bare for a space of at least 2 inches. The lower ulnar fragment being too small to drill, this bone was held by stout catgut stitches through the periosteum. In like manner the upper arm wound was cleaned up and the humerus wired. Both wounds were drained and the arm put on a straight splint, held firmly to the patient's body by a swathe.

Two days later it was evident that there had been so much mangling of the tissues that both wounds were septic, and the hope of primary union had to be abandoned. All the skin stitches were taken out, the arm placed on a pillow and kept under a continuous douche of corrosive sublimate 1 to 20,000 during the day.

Three weeks later, although the wounds were granulating in places, the infection in the lower arm had spread upward along the muscle sheaths and fluctuation was present over both condyles. There was a great deal of pain in the arm, requiring frequent doses of morphia, and the dressings, which had to be done twice a day on account of the profuse discharge, could only be carried out under primary anesthesia.

A second operation at this time was necessary. The tissues about the elbow were incised and through and through drainage with tubes instituted.

Three weeks later the condition was as follows: All bony fragments were out of place and there was no attempt at bony union. Pain and fever were much less and the patient was out of doors daily. Movement of fingers and thumb very slight. Seen by Dr. A. T. Cabot and Dr. M. H. Richardson, who considered it very doubtful if arm could be saved, and advised amputation. The patient was much averse to this, however.

One month later the bare cortical shell of the radius was found loose and was removed together with the silver wire. Inside of it was found a cylindrical mass looking somewhat like a slug. The tip of this was yellowish like fibrin, becoming more vascular further up, while near the top it was hard and apparently newly

forming bone. Thus, the periosteum being absent, it was evident that this proliferation was from the endosteum. This proliferated bone eventually grew down to, and united with, the lower radial fragment. The humerus and ulna united and the skin was successfully filled in with repeated pin-point grafts. The power to move the fingers and thumb steadily increased. Flexion of the wrist was present, but extension and rotation were wholly absent. The patient was discharged four months after entrance with the prospect of a fairly useful arm.

Present condition: The condition at present is as follows: The grasp of the hand is good. There is practically no pronation or supination; the lateral wrist motions are very slight; and there is some atrophy of the hand muscles. Extension of the wrist and fingers is absent. The hand is very valuable for many things, however. Buttoning the clothes, writing, holding eating utensils are all done with ease; and the patient, who now conducts a pool room, tells me that he can run off fourteen or fifteen balls at pool without difficulty.



Present condition of arm.

There are three points which contributed much toward this unusually good result:

First, that after the first one or two days all dressings were done with dry sterile gauze and no antiseptics or "poultices" used. This method has had its especial advocate in Dr. Elliot and has been described by Dr. A. L. Chute in the JOURNAL.

A second factor of great importance was the growth of new bone from the endosteum. This took place steadily though slowly, and, as the x-ray at present shows, somewhat irregularly. It sufficed, however, to fill in the gap, and the irregular union with the ulna can easily be removed should it seem best.

The last point is the splint, which was of moulda-ble wood fiber. This is unsurpassed for lightness and ease of removal, and made convalescence and walking about much easier than it would have been with the ordinary metal internal angular, or even with an especially fitted plaster splint.

Most important of all is the fact emphasized by this case, that where time is a minor consideration with the patient, conservative treatment of arm injuries is strongly to be advised and may give unexpectedly good results.



X-ray of arm as it is at present, showing irregular union of radius and ulna from proliferation of endosteum.

Reports of Societies.

THE AMERICAN THERAPEUTIC SOCIETY.

SIXTH ANNUAL MEETING.

HELD IN PHILADELPHIA, MAY 4, 5 AND 6, 1905.

THURSDAY, MAY 4.

THE address of welcome was made by DR. HORATIO C. WOOD of Philadelphia, and the response by DR. R. W. WILCOX of New York; after which the President, DR. OLIVER T. OSBORNE, New Haven, Conn., delivered his address on

THE THERAPEUTIC ART.

The definition of therapeutics, he said, involves everything of importance to the patient. All the scientific physiology, etiology and pathology of the world are of no use to him without their final practical application through the knowledge of therapeutics.

All successful quackeries succeed by their power to relieve symptoms or to cause such mental suggestion as will lessen the strain on overtaxed minds; and many a loyal patient is driven to employ quackery by reason of scientific neglect. The treatment of disease was, until recent years, the most studied branch of medicine. It was at first surrounded by mysticism of all kinds, though even in earlier times management was taken into consideration, as well as the actual giving of drugs; but all good results were accredited to the applied remedy, and, like the "lack of sufficient faith" plea of the Christian Scientists for their unsuccessful cases, failure to cure in those times was ascribed to the special devil of the disease. The educated physician of to-day rarely speaks of "curing," but constantly of "managing" a disease. He leaves the word cure for practitioners of a dogma, and for quacks and nostrum vendors. The management of a disease includes diet, hygiene, climate, water, electricity, etc., if indicated, as well as the necessary drugs, and as a whole it means its therapeutics. Dr. Osborne made a plea for a more thorough study of therapeutics, and detailed an elaborate scheme for the instruction of students throughout their four years' course. Every medical school, he thought, should have a special chair of applied therapeutics, held by a clinical man who is a specialist in internal medicine.

The first regular paper was by Drs. T. Sollmann and E. D. Brown, Cleveland, on

THE EFFECTS OF INTRAVENOUS INJECTIONS OF ERGOT ON THE MAMMALIAN CIRCULATION.

Ergot is quite commonly supposed to produce a powerful and persistent contraction of blood vessels. As this belief rests mainly on clinical evidence, which is not conclusive, and as different investigators have obtained variable results in experiments on animals, the authors undertook an investigation with a view to determine the circulatory effects of the ergot preparations as found on the market when given in therapeutic doses, both in health and in pathological conditions in which the drug is recommended. Their experiments included some 350 intravenous injections, made on 38 animals, and the results obtained were summarized as follows: The principal result of the investigation is to show, (1) that the rise of blood pressure produced by ergot in dogs is insignificant and too short for any practical use, and (2) that its effects are cardiac rather than vasomotor. In their extensive experimental material there is scarcely one fact which would point to ergot as a useful drug for modifying the general circulation. In those conditions in which it has been mainly used (where the blood pressure is low), it fails the most completely. In view of these facts it seems to them that the clinical use of ergot for these purposes lacks experimental justification. In making these statements, they would not be understood as denying the possibility of the existence of the actions which have been claimed for it. The experiments of Mellin and of Bradford and Dean, as also its familiar action on the comb of fowl, indicate that it does act on some of the muscular areas. This must alter the distribution of blood in the individual organs, and this, again, might explain the efficiency which is claimed for it in certain obscure diseases. It is further conceivable that the vasoconstrictor action, of which they found some indication in dogs, is more powerful in man.

Dr. F. P. Morgan gave a *résumé* of the clinical effects and applications of ergot.

Dr. E. D. Fisher had found the drug efficient, when given in large doses, in a few cases of neuralgia and tic douloureux, but in the majority of instances it failed. In Bellevue Hospital some of his colleagues claimed that it was useful in so-called cases of "wet brain," especially those in which the condition followed acute alcoholism, but personally he had found it absolutely valueless. Others had asserted that ergot in large doses was of great service in the maniacal state, or in any case of delirium, but his experience did not bear this out.

Dr. Osborne said that in cases with a tendency to watery exudation of the brain, there was no drug upon which he depended so much as on ergot. He had found it of service, if given early, in cerebro-spinal meningitis, and he was also accustomed to depend upon it in conditions of circulatory depression. In one case of diabetes insipidus in a boy, its beneficial effect was remarkable, and whenever the drug was discontinued the patient began to suffer from nausea, vomiting and headache.

The next paper was by Dr. Frederick Peterson, New York, on

THE PROPER SPHERE OF BROMIDES IN EPILEPSY.

The writer stated that while it was a fact that the frequency of attacks is lessened by their use, he was convinced that a great many more epileptic patients have been injured than have been benefited by bromides. He had often seen bromide dementia, while there were cases in which the bromides induce actual toxic insanities, melancholia, mania, or paranoid conditions, and he said his object in bringing this subject before the profession was to arouse a general antipathy to their indiscriminate use. He believed he was not over-stating the matter in saying that, as a rule, this drug was worse than the disease. The large experience of the Bielefield and Craig colonies was in favor of very small doses of bromides when used. Of far more value was the open-air life, with simple food, regular hours and a strenuous use of the muscles.

Dr. Fisher said that in his opinion it would be most unfortunate if the views of Dr. Peterson in regard to the bromides should go forth as the sentiment of this society. He had never seen cases like those described in the paper. He believed that the intelligent and judicious use of the bromides was required in epilepsy, and knew of no drug which could take their place. He also differed with Dr. Peterson in regard to the value of the colony treatment. Under this the fits went on, and the proportion of cures was very small. At the same time, he was in favor of this form of treatment. Similar views regarding Dr. Peterson's estimate of the bromides were expressed by Drs. Sprigg, Hall and Reyburn.

Dr. Solomon Solis-Cohen, Philadelphia, read a paper on

THE MANAGEMENT OF CHRONIC PARENCHYMATOUS AND CHRONIC INTERSTITIAL NEPHRITIS.

He spoke of the value of diet, proper clothing, regulated exercise, and rest, massage and a warm, dry climate when this was possible. Also of the importance of watching the quantity of urea excreted, as this was an index of the functional capacity of the kidneys. As to drugs, acontite and strontium had proved the most useful in his hands. Of all drugs in chronic interstitial nephritis he had obtained the best results with strontium bromide, and strontium lactate was his second choice. The present tendency was to use the nitrites in very large doses, and he believed this was a mistake. In the vast majority of instances ½ drop of spirit of glonion was all that was required, and sometimes even this was too much. Erythrol tetra-nitrate was a valuable remedy on account of the permanence of its effects. Bartram's mixture was especially serviceable in parenchymatous nephritis, and digitalin was, on the whole,

perhaps the best diuretic. In some cases thyroid extract produced very good results.

DR. T. L. COLEY, Philadelphia, read a paper on the

MEDICAL TREATMENT OF SEROUS EFFUSIONS.

dealing briefly with the etiology of dropical conditions, and calling especial attention to the importance of the study of osmotic disturbances and the opinions of Loeb and others that this question is of far greater importance than the mechanical factors of blood pressure. The significance of the study of sodium chloride excretion and retention in relation to states of edema was dwelt upon as having important bearing on the question of dietetic treatment. Dr. Coley's experiences with a salt-free diet in reducing edema, bears out the results of other investigators in this field. Leube's contention of the value of salivation in causing the disappearance of edema was referred to, and stress laid upon the efficacy of sialogogues in selected cases. The dangers of diaphoresis in subcutaneous edema were emphasized. In this condition free sweating removes the watery portions of the edema, leaving the solid portions in more concentrated form, and consequently with more toxic properties. Finally, the field of usefulness and limitations of diuretics were discussed, especially calomel, caffein, theobromine and the digitalis group.

DR. L. KOLOPINSKI, Washington, read a paper on the

TREATMENT OF CHRONIC NASAL CATARRH WITH SULPHUR.

Sulphur, he said, was of service especially on account of its antiseptic and astringent properties, and in cases where no surgical interference was called for he had had excellent results from the insufflation of sulphur precipitatum. It was very valuable also after operative procedures by reason of its anti-hemorrhagic effects. In atrophic rhinitis he had not been able to get the same good results with it as in other forms of disease.

FRIDAY, MAY 5.

DR. HORATIO C. WOOD, JR., Philadelphia, read a paper on

THE VALUE OF PHYSIOLOGICAL SALT SOLUTION IN CIRCULATORY FAILURE.

This was an experimental study, undertaken because in looking over the literature upon the subject of the use of the so-called physiological salt solution in therapeutics he had been impressed by two points: (1) The extraordinary abundance of it, and (2) the remarkable paucity of definitely proven facts. He, therefore, thought it would be useful to start at the foundation and endeavor to determine by experiment the truth or falsity of those assumptions which have formed the basis of salt solution therapy. The following were the conclusions which appeared to him to be justified by the evidence he obtained: (1) The injection of a .7% solution of sodium chloride in any quantity up to four times the total volume of the blood has no effect upon the blood pressure in the normal animal. (2) When the quantity of fluid injected is not more than the total volume of the blood, the greater proportion of the fluid apparently remains in the vessels for a considerable period of time, the pressure in the arteries being kept at the normal height probably by vascular dilatation. (3) When the quantity of injected fluid is greater than the total volume of the circulation, the excess escapes very rapidly from the vessels. (4) This excess does not pass out through the kidney, at least for some time after the injection. (5) A very large amount of the fluid escapes into the gastro-intestinal tract; some apparently also leaks through the vessel walls, especially into the lungs, giving rise to pulmonary edema. (6) In conditions of low pressure, due either to hemorrhage or to vasomotor paresis, and sometimes in that caused by depressant poisons, the injection of physiological salt solution is capable of increasing the arterial pressure to a point approximately normal. (7) In the great majority of instances this rise is permanent, although in one or two cases, for some reason not determined, it lasted but a few minutes. (8) The rise produced by salt solution is brought about through purely mechanical influence. (9) The subcutaneous injection produces an elevation of blood pressure in conditions of circulatory depression, but it is much slower in its action than the intravenous infusion. An effect from hypodermoclysis may be expected in about half an hour. (10) No distinct difference in the immediate effects are demonstrable between solutions containing .5% or .7% of sodium chloride, nor do variations in temperature between 86° to 112° F. apparently affect the results.

Dr. R. T. Morris said that whenever a patient was in a septic condition, no matter what the nature of the blood poisoning, he was apt to order a venous infusion of salt solution. The practical results had proved very gratifying, and the same was true in cases of extra-uterine pregnancy with rupture and slow hemorrhage. If the patient suffered from shock, as well as hemorrhage, he had sometimes given infusions of several thousand cubic centimeters before operating, and had found that the threatening symptoms were relieved to such an extent that he could go on with the operation. He had employed this procedure with good results also in cases where hemorrhage was anticipated, as in the removal of a spleen.

DR. T. E. SATTERTHWAITE, New York, read a paper on

CLINICAL EXPERIENCES WITH CERTAIN DRUGS IN HEART DISEASE.

The first that he mentioned was suprarenal extract, which he considers as probably the most powerful heart stimulant we have. For several years he has been using it in the form of the dried and powdered gland, put up in 2½ gr. capsules. As a rule, a single dose promptly relieves palpitation or precordial pain, and sometimes in threatened heart failure he gives as much as 12½ gr. of this powder daily. In threatened heart failure, however, he depends more upon nitroglycerin than any other remedy. A favorite combination with him is nitroglycerin, 1–100 gr., amyl nitrate, ½ gr.; menthol, 1–50 gr., and oleoresin of capsicum, 1–100 gr.; with 10 drops of castor oil as an excipient. Whenever nitrites produce violent throbbing in a patient with arteriosclerosis, they should be suspended. In very advanced examples of arteriosclerosis he has had success with erythrol tetranitrate, which is far more lasting in its effects than nitroglycerin. Iodine he has found indispensable in the arteriosclerosis of gout, syphilis and old age, and if the iodides are not well borne, he uses hydriodic acid or iodine in some other form. In syphilitic cases a mercurial course should precede the iodides, or certainly form a part of the treatment. Iodine no doubt permeates all the tissues of the body; it also appears to act favorably on the heart itself in myocardial diseases, and especially in chronic aortic endocarditis. He thought there could be no objection to Caton's method of giving iodine in acute benign endocarditis; even in the malignant form it offered possibilities, and was worthy of a serious trial. Strychnine continues to maintain its position as a reliable heart stimulant; success with it, he believes, lies in not increasing the dose beyond $\frac{1}{30}$ gr. as a rule, and in not giving it for more than two

weeks at a time. Cactus he regards as a good heart regulator, and he gives it in one-minim doses as a succedaneum to strychnine. Arsenic may be relied upon, especially in the heart diseases of old people, when heart failure is not threatened. Strophanthus has a distinct field as a cardiac rather than an arterial compressor, and is gaining in favor as it is being better understood. It shows to special advantage in the well-known Da Costa pill of the tinctures of strophanthus, digitalis and belladonna, with nitroglycerin. Sparetrine he has used satisfactorily, both in heart weakness and in cardiac dropsy. Apocynum, or Canadian hemp, has some of the properties of digitalis, but is laxative in addition; so that it is useful in cardiac and renal dropsy. Dr. Satterthwaite places great reliance on camphor. In threatened heart failure, if the nitrites and other remedies fail, hypodermics of camphor in sterilized oil may properly be used. Aside from this use of the drug, the monobromate is a most serviceable preparation for palpitation, especially the nocturnal form, and in cardiac neuroses. In any form of mitral disease which is not compensated, or in failing compensation from any cause, and in cardiac dropsy, digitalis is useful up to the point of restoring normal tension; after which its action is detrimental except so far as it serves to aid diuresis. Its field is in low, never in high tension, and it should form no part of the regular treatment in acute valvular diseases, in the fat heart, in fatty degeneration, in aortic diseases, in advanced arteriosclerosis, or in cardiac neuroses. It is apparent, therefore, that its use is prohibited in a large number of cardiac affections. Aconite, in small doses, is soothing, for the pulse becomes less frequent and the blood pressure is lowered. It is particularly useful in cardiac neuroses.

DR. OSBORNE thought that arsenic and iodine were useful because they both stimulate the thyroid. Adrenalin, he believed, should be used with caution. It was of advantage only as a pressure-raising drug. If pushed too far it would produce depression, and perhaps respiratory depression. Dr. R. W. Wilcox said that the danger from suprarenal extract lay in the fact that its effect on the arteries antedates by an hour its effect on the heart. Therefore, as the heart is stimulated only at a late stage, it is entirely unsuited for emergencies. Dr. Wood considered adrenalin the most dangerous drug which had ever been introduced for the treatment of cardiac failure. In a hospital in a neighboring city he had seen cases in the last stages of myocarditis, endocarditis, and other cases with heart failure treated with this remedy, and all the patients were suffering from pulmonary edema. In animals a single dose would often give rise to such edema. There was no drug which produced high tension more readily than adrenalin, and he, therefore, believed it to be a potent cause of arteriosclerosis. Dr. Solis-Cohen was accustomed to use suprarenal gland in powder. It was an emergency remedy, and he believed it to be one of the best stimulants at our command. He did not know of any condition, however, in which its continued use was called for. Dr. Satterthwaite, in closing the discussion, said that he had never made use of adrenalin, always giving the powdered gland. He employed it temporarily only, and in his hands it had certainly proved very useful in cases of cardiac failure. In certain individuals, however, this remedy appeared to have no effect whatever. That high tension was capable of producing arteriosclerosis was rather a presumption than an established fact; it was a matter which still had to be proved. The real cause of the thickening he believed to be a poison circulating in the blood. As favoring this hypothesis he referred to lead-poisoning, gout and syphilis, which were all acknowledged causes of arteriosclerosis.

(To be continued.)

Recent Literature.

A Reference Handbook for Nurses. By AMANDA K. BECK. Philadelphia and London: W. B. Saunders & Co. 1905.

This handbook is essentially a compilation of practical notes made by the author during her training as a nurse. This insures its practical worth. To these notes are added a number of brief articles by physicians and nurses which serve to complete what must be regarded as an extremely useful book, not only for nurses, but for physicians who desire to know the practical details of nursing.

Manual of Operative Surgery. By JOHN FAIRBAIRN BINNIE, A.M., C.M. (Aberdeen), Professor of Surgery, Kansas City Medical College, Kansas City, Mo.; Fellow of the American Surgical Association; *Membre de la Société Internationale de Chirurgie.* With 559 illustrations, a number of which are printed in colors. Philadelphia: P. Blakiston's Son & Co. 1905.

The author has written a book in which he has omitted, so far as possible, "all description of those procedures which are ordinarily thoroughly given in the usual textbooks on general surgery." For this reason amputations and ligations and such portions of genito-urinary and of rectal surgery as are treated in common textbooks are omitted. The surgery of the bones and joints is not considered, for the author found that it would require a second volume. In many ways this is one of the most practical operative surgeries that has been written. A great deal of discrimination has been used in what to omit, and, after all, that really constitutes the success of any book on surgery, for the literature is so extensive that the time comes when one must omit certain parts. It is a good, safe, sound guide to operative surgery, one that could be placed in the hands of any student, and we can recommend it most heartily as a small handbook.

The Practical Medicine Series of Year Books. Under the general editorial charge of GUSTAVUS P. HEAD, M.D. Volume ix. Physiology, Pathology, Bacteriology, Dictionary. Edited by W. A. EVANS, M.S., M.D., ADOLPH GEHRMANN, M.D.; WILLIAM HEALY, A.B., M.D. Chicago. 1904.

This admirable review of the progress of pathology maintains the high standard set by the writers in the volume for the previous year. It forms one of an annual series issued at monthly intervals, which cover the entire domain of medicine. We can highly recommend this work to all practitioners who wish to keep in touch with the rapid advances of pathological science. It forms a valuable supplement to the latest textbooks of pathology; convenient in size, and moderate in price. Only a small part of the work is devoted to anatomy and physiology, and the

papers selected for review in these sections deal with subjects of special interest to the pathologist and clinician. Every page of the volume bears evidence of careful and conscientious work and the writers have succeeded in the difficult task of presenting interesting abstracts of scientific papers.

Les Fractures de l'Humerus et du Femur. Par le DR. THEODORE KOCHER, Professeur de Clinique chirurgicale à l'Université de Berne. Traduit de l'Allemand par le DR. L. SENN, Chef de Clinique chirurgicale à l'Universite de Lausanne. Avec 105 Figures et 56 Planches hors Texte. Génève. Henry Kundig, éditeur. 11, Corraterie, 11. Paris. Felix Alcan, éditeur, 108, Bd. St. Germain. 1904. Tous droits réservés.

This is a translation of the well-known work of Dr. Kocher on fractures of the humerus and femur. While many of the observations are old, yet the collection of these various modifications of fractures of the humerus and femur make a very valuable reference book. Professor Kocher has recorded his clinical observations and experimental research of the past twenty years on the fractures in the neighborhood of the shoulder, elbow and hip. It is interesting to note, and perhaps significant, that there is no mention whatever of the use of x-rays. The cuts are very uneven in character; many of them are excellent; some are good, while others are positively bad. Some of the drawings are very crude; they convey, however, the author's idea.

Surgery: A Manual for Students and Practitioners. By M. D'ARCY MAGEE, A.M., M.D., Demonstrator of Surgery and Lecturer on Minor Surgery in the Georgetown University Medical School; Assistant on the Surgical Service of the Georgetown Hospital, Washington, D. C., and WALLACE JOHNSON, Ph.D., M.D., Demonstrator of Pathology and Bacteriology in the Georgetown University Medical School; Assistant on the Surgical Service of the Central Dispensary, Washington, D. C. With an *Appendix on X-Ray Work in Surgery*, by EDWARD O. PARKER, A.M., M.D., Physician at the New York Dispensary. Series edited by V. C. PEDERSEN, A.M., M.D., Instructor in Surgery and Anesthetist and Instructor in Anesthesia at the New York Polyclinic Medical School and Hospital. Illustrated with 129 engravings. Philadelphia and New York: Lea Brothers & Co.

This little book is an excellent epitome of surgery. It is well adapted for use as a quiz compend, the essential points in each subject being satisfactorily presented.

Pathological Technique. A practical manual for workers in pathological histology and bacteriology, including directions for the performance of autopsies and for clinical diagnosis by laboratory methods. By FRANK BURR MALLORY, A.M., M.D., Associate Professor of Pathology, Harvard University Medical School, First Assistant Visiting Pathologist to the Boston City Hospital, Pathologist to the Children's Hospital; and JAMES HOMER WRIGHT, A.M., M.D., Director of the Clinico-Pathological Laboratory of the Massachusetts General Hospital, Instructor in Pathology, Harvard University Medical School. Third edition. Revised and enlarged with 156 Illustrations. Philadelphia: W. B. Saunders & Co. 1904.

An extended review of the second edition of this standard work was published in these columns three years ago. Among the new technical methods which have been added to the present edition are Hill's hanging-block method for observing development of bacteria, Harris's celloidin sac method for studying the action of the body fluids of an animal on bacteria and the action of the bacterial products on the animal. Both the Hiss and Drigalski-Conradi methods of isolating typhoid bacilli from feces are given. The section on histological methods contains descriptions of the new stains, such as Mallory's stain for fibroglia fibrils, Benda's stains for neuroglia and myoglia fibrils and for fatty acid crystals, Best carmine stain for glycogen and Mayer's stain for amyloid, Weigert's latest staining methods, and Wright's modification of Leischman's blood stain. Some admirable photographs have been added. The work in its improved form will be of great value to every laboratory worker in pathology.

Saunders' Question Compends. Essentials of Materia Medica, Therapeutics and Prescription Writing. Arranged in the form of questions and answers, prepared especially for students of medicine. By HENRY MORRIS, M.D., Fellow of the College of Physicians of Philadelphia, etc. Sixth Edition, thoroughly revised by W. A. BASTEDO, Ph.G., M.D., Tutor in Materia Medica and Pharmacology at Columbia University, College of Physicians and Surgeons, New York, etc. pp. 295. W. B. Saunders & Co. 1904.

In this sixth edition the chapters on Opium, Alcohol, Antipyrine, Mercury, Veratrum, Iodoform, Carbolic Acid and Formaldehyde have been in part rewritten. New articles on Adrenalin, Stypticin and the Iodine and Silver Synthetics have been added.

The book is better suited for the student than for the general practitioner, giving him in a condensed form the more important data on the composition and use of drugs. It maintains the standard of its previous editions.

Diseases of the Stomach and their Surgical Treatment. By A. W. MAYO ROBSON, F.R.C.S., and B. G. A. MOYNIHAN, M.S., Lond., F.R.C.S. Second Edition. New York: William Wood & Co. 1904.

This is the second edition of this work, which was originally presented as the Hunterian Lectures in 1900. The combined experience of the authors now amounts to a total of over six hundred operations. In the first edition the authors prophesied an extraordinary degree of

activity in the surgical treatment of diseases of the stomach. This prophesy has been fulfilled, and in this book one begins to see the judicial presentation of results. Activity is not confounded with accomplishment. We do not doubt that a third edition will soon be needed. All things considered, this book presents the best work on the surgical treatment of diseases of the stomach.

The After-Treatment of Operations. A Manual for Practitioners and House Surgeons. By P. LOCKHART MUMMERY, F.R.C.S., Eng., B.A., M.B., B.C. Cantab., Hunterian Professor, Royal College of Surgeons; Surgeon to King Edward VII Hospital for Officers; Assistant Surgeon, St. Mark's Hospital for Fistula and other Diseases of the Rectum, and to the North-Eastern Hospital for Children; Demonstrator of Operative Surgery, St. George's Hospital. Second Edition. New York: William Wood & Co. 1905.

This is the second edition of this book. The author has added in the introductory chapter a brief statement regarding the smoke and drug habits and post-operative insanity. The chapter on shock and collapse has been revised, and the author has accepted Crile's views as to the pathology of these conditions. The book is uneven in its value; the after-care of many operations is in full detail, while others are rather slightingly considered. The cuts are very crude and the bibliography is not satisfactory.

Nervous and Mental Diseases. By JOSEPH DARWIN NAGEL, M.D. 12mo, pp. 276. With 46 illustrations. Philadelphia and New York: Lea Brothers & Co. 1904.

This volume is one of the Medical Epitome series. The value of these brief compends has always seemed to us doubtful, and the present volume strengthens us in that belief. In spite of the need of brevity and the claim that it presents a brief compendium of modern knowledge of neurology, pages are taken up with the description of affections which are no longer recognized, such as anemia and hyperemia of the brain and cord, ovarian and masturbating insanity and the like. The sections on individual diseases are defective and contain many statements no longer accepted, as that Landry's paralysis has no demonstrable lesions. In the section on multiple sclerosis nothing is said as to diagnosis except the distinction from paralysis agitans. The treatment of "rheumatic insanity . . . consists in giving all the latest remedies for rheumatism"! "Final recovery is simply a question of time," the author adds. The illustrations are selected without any rational basis. Four large half-tone pictures, covering over half a page each, give the student a very inadequate idea of secondary degenerations in the cord; three pages are devoted to myograms of the tremor of paralysis agitans, but no representation of the pathology of tabes or of anterior poliomyelitis is given, and no diagram of the segmental areas of the cord. The quiz questions are a needless waste of space. If the student wants a brief epitome of nervous and mental diseases let him avoid this one.

The Eye, Mind, Energy and Matter. By CHALMERS PRENTICE, M.D. Small 8vo. pp. 131. Published by the author. Chicago. 1905.

The author "speaks an infinite deal of nothing" but out of his rhapsodies on mind, the master architect, energy, matter, sunrise, young love and dynamos, we gather what others have told us before, that eyestrain "brought death into the world and all our woe," and, in particular, the novel view that eyestrain is responsible for the drink habit. If this be true, we would suggest that the State of Maine substitute large appropriations for spectacles instead of making such frantic efforts to enforce prohibition.

Surgery of the Prostate, Pancreas, Diaphragm, Spleen, Thyroid and Hydrocephalus. A historical review. By BENJAMIN MERRILL RICKETTS, Ph.B., M.D. Cincinnati. 1904.

The author has considered the surgery of all the subjects given in the title of the book, briefly summarizing the anatomy, etiology, abnormalities, physiology, pathology and treatment. Appended to each of these subdivisions is an elaborate bibliography, chronologically arranged. The book will be found useful as a reference book to the literature of each of the various subjects.

An Introduction to Chemical Analysis. By ELBERT W. ROCKWOOD, M.D., Ph.D., Professor of Chemistry and Toxicology, and Head of the Department of Chemistry in the University of Iowa. Second edition. 12mo volume of 255 pages. Philadelphia: P. Blakiston's Son & Company. 1904.

This excellent laboratory manual has been brought up to date and made more valuable by a number of additions. The work is devoted to qualitative, volumetric and applied analyses, and to the detection of poisons. It is an unusually good guide to students of chemistry, and we take pleasure in recommending its use by teachers of the subject.

Handbook of Surgical Anatomy. By G. A. WRIGHT, B.A., M.B. (Oxon.), F.R.C.S., Professor of Systematic Surgery in the Owens College, and C. H. PRESTON, M.D., B.S. (Lond.), F.R.C.S., L.D.S. (Eng.), Lecturer on Dental Anatomy in the Owens College. Philadelphia: P. Blakiston's Son & Co. 1904.

This is a small handbook which contains some very interesting anatomical facts and their surgical application. The book was written principally for the students in the Manchester School of Medicine, but is one that we feel sure can be read with advantage by students and surgeons. It does not take the place of Treves' nor of one of the larger works in surgical anatomy, but it is distinctly valuable in its suggestiveness.

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THE SEASON OF COLLEGE COMMENCEMENTS

THE season of college commencements is becoming each year of increasing interest to the medical profession. During the past decade medicine as a profession has come into closer and closer affiliation with university establishments, and, as a natural consequence, the services of medical men are coming to be increasingly recognized through the bestowal of honorary degrees. Not a year passes that several medical men of prominence are not selected by our leading universities for honorary degrees, a very noticeable change from the conditions which prevailed twenty-five years ago. For example, this year Harvard University bestowed the degree of Doctor of Science upon Dr. J. H. Wright and the degree of Doctor of Laws upon Dr. R. H. Fitz, both connected with the Massachusetts General Hospital and the Harvard Medical School. In conferring these degrees, President Eliot spoke as follows:

"James Homer Wright, pathologist, both teacher and investigator, strong contributor to the advance of that biological science which holds out to mankind good promise of deliverance from mysterious evils long endured; and

"Reginald Heber Fitz, for thirty-five years a teacher of pathological anatomy and of the theory and practice of physic, skilful and acute diagnostician, much trusted consulting physician, sagacious contributor to the progress of medicine."

Dr. C. L. Dana and Dr. A. Jacobi of New York have likewise this year been the recipients of the honorary degree of Doctor of Laws from Dartmouth and Yale, respectively. Many others might also be included in the list. The significance of this custom, which appears now to be well established, is the complete acknowledgment of the dignity of the medical profession, and of the fact that its distinguished members are worthy of the same recognition from educational bodies as those representing the more purely academic branches. It is furthermore significant as showing that medicine has finally entered upon a phase which must inevitably lead to its expansion and closer relationship to various branches of learning.

At the commencement exercises this year at Harvard, announcement was made by the president of the Alumni Association, Bishop Lawrence, that nearly two million and a half dollars had been guaranteed as a fund to be used for the increase of the salaries of instructors in the college and graduate departments. The medical department of the University is not included in the provisions of this fund, much as it is needed. Medical teaching is suffering at the present time from the failure to recognize that teaching of whatsoever sort is worthy of a just reward. The prevalent idea that practitioners of medicine may rightly be denied the rewards which come to their colleagues who have not taken up the actual practice of their profession is unfortunate and detrimental to the best interests of teaching. It is perfectly clear that clinical teachers, as well as those who devote their attention to the more theoretical aspects of medicine, should be adequately paid and should be required to make a profession of teaching as well as of practice. This demands money, and with public opinion as it is at present we should not wait long before seeing an endowment for medical teaching which will primarily recognize the worth of the teacher and pay for the services he renders, irrespective of other conditions. Much as the collegiate departments of our universities need endowments for the more adequate payment of teachers, it is evident that a hardly less crying need exists in the medical departments, if we are to retain men capable of teaching as teachers and make it possible for them to limit their activities in other directions. This we are confident applies equally to clinical and laboratory instructors.

The Harvard commencement this year was also rendered noteworthy by the presence of President Roosevelt of the class of '80. His speech was characteristic and contained many matters worthy of note. He characterized the functions of a great university as essentially two: the first, to produce a small number of scholars of the highest rank, the second, to send into the world

men incapable of great achievement, but with a balanced development, particularly of character, which shall fit them to do work both honorable and efficient. He felt that there were also two points in the undergraduate life of Harvard University about which some concern may be felt, one being the increase of luxury, and the other the doubtful ethics of certain phases of modern college athletics.

I have no sympathy whatever with the overwrought sentimentality which would keep a young man in cotton wool, and I have a hearty contempt for him if he counts a broken arm or collar bone as of serious consequence, when balanced against the chance of showing that he possesses hardihood, physical address and courage. But when these injuries are inflicted by others, either wantonly or of set design, we are confronted by the question, not of damage to one man's body, but of damage to the other man's character. Brutality in playing a game should awaken the heartiest and most plainly shown contempt for the player guilty of it; especially if this brutality is coupled with a low cunning in committing it without getting caught by the umpire. I hope to see both graduate and undergraduate opinion come to scorn such a man as one guilty of base and dishonorable action who has no place in the regard of gallant and upright men.

This opinion will no doubt meet with the assent of many thinking men who see in modern athleticism a valuable tendency for good, but one peculiarly exposed to abuse.

THE QUESTION OF HEREDITY.

The change of attitude toward a subject deeply rooted in the medical mind is illustrated by the position taken by Dr. Stewart Paton in his recently published book on Psychiatry, regarding the influence of heredity. Not many years ago heredity was supposed to be a sufficient explanation of many processes of disease, among which the most conspicuous were those connected with the mental life. The weakening of this attitude as our knowledge has increased has been a very noticeable and encouraging sign of progress. Like many other matters formerly accepted as explanatory the word "heredity" is now gradually losing its significance as popularly applied and is demanding further explanation.

In Dr. Paton's chapter on "General Causes of Insanity," he mentions the fact which the slightest experience may amply verify, that even many alienists fail to appreciate our limitations in relation to our knowledge of the transmission of normal and abnormal mental traits. Attention is called to the fact that at present our accumulation of data is entirely inadequate to justify valuable deductions and that the facts ordinarily gained by the alienists are too vague to merit serious consideration. Speaking of the fallaciousness of statistics on heredity, Dr. Paton alludes to an investigation made by Koller who examined the family histories of 370 perfectly sane individuals, finding mental deterioration in the ancestors of 59%, whereas in the case of 370 insane persons the so-called factor of heredity was present in 76.8%. The value of such an investigation is apparent. It shows how groundless the popular idea is that mental defect in the ancestors without further specification means disturbance in the offspring. Such studies should be carried much further. It would, in fact, be well if the statistics as gained by census reports could be utilized to this end.

What Dr. Paton draws particular attention to and what we are glad to reiterate is the general fact that heredity or hereditary predisposition, as the terms are commonly employed, is an absolutely vague and uncertain quantity, and that without further analysis mere statements of such a tendency should be given practically no weight in the determination of existing conditions. We do not in the least mean by this statement to imply that heredity in the broad biological sense is not one of the most fundamental elements in the determination of future conditions. Our contention merely is that the problem, particularly as related to the mental sphere, is far too complex and too little understood at the present time to permit of its application in the everyday affairs of medical practice. Instead of being used as an etiological factor which any practitioner is justified in assuming, hereditary predisposition for each individual case should be studied with the utmost care by thoroughly qualified persons before deductions of value may be reached. Although Dr. Paton gives comparatively little space to the consideration of the subject, his statement of his opinion is unequivocal and is certainly representative of the best thought of the time on a subject which has been hopelessly abused by many earlier writers. We have no doubt whatever that psychiatry would rapidly advance in this country to the position which it merits if this question of heredity and certain others of less significance could be placed before the general medical profession in a proper light. There can be little question that this result is about to be attained.

THE CELEBRATION OF INDEPENDENCE DAY.

It is too soon to determine the mortality and injuries connected with this year's celebration of Independence Day. It is, however, evident

that public opinion each year, together with the spread of information concerning the dangers of certain forms of explosives, is doing much toward rendering the day safer for the participants in its celebration and more bearable for the people at large. In this city the day passed with fewer accidents than ever before and with less noise. Last year there were fewer accidents than the previous year, and this year only 105 accidents were treated in the large hospitals. There were also fewer arrests than heretofore, indicating an improved sense of responsibility on a day which has oftentimes been given over to license and recklessness.

Turning from Boston to the reports from other parts of the country, it appears that the improvement is not universal. Statistics up to midnight of the Fourth of July indicate that 46 persons were dead and 1,677 injured as a result of various forms of celebration, whereas last year the deaths for the same period were 48 and the injured 1,545. Three of the deaths reported this year are from tetanus and naturally others may be expected from this cause. It will no doubt be many years before public opinion enforced by law will render such accidents impossible. One accident, for example, is reported from Brooklyn, N. Y., in which seven children, in age from four to fourteen years, were injured by the explosion of a can of powder from which they were loading a toy cannon, the explosion being due to a match thrown accidentally into the powder by a passer-by. There certainly should be some law to prevent the possibility of such an accident as this. Why minors on July Fourth should be allowed the use of high explosives to their almost certain injury is hard to reconcile with an enlightened civilization. Progress to a more rational celebration of the day must, no doubt, be slow and brought about by the gradual education of the public. One tendency in this direction appears to be the substitution of sports and games in place of the more dangerous forms of celebration. Whatever the final outcome may be, it is clearly the duty of the medical profession to insist upon the dangers, both immediate and remote, resulting from the careless use of explosives. It will be many weeks before the returns are all in, and no doubt the lists of fatalities will be very greatly increased. We have hopes, however, that the deaths from tetanus may be less this year than heretofore, owing to the very general campaign which has been instituted against the toy pistol and similar devices.

MEDICAL NOTES.

THE HEAT IN EUROPE. — It is reported that in Italy and throughout Central Europe a period of excessive heat has now lasted for several days leading to the death of more than one hundred persons in Germany alone. The thermometer is said to have reached 107° in the shade.

CONDITIONS AT THE CANAL ZONE. — Reports from the Panama Canal Zone appear to show that there is an increase of various infectious diseases, including yellow fever. It is evident that the coming summer will prove a hard test for the medical management of the work progressing at the isthmus. The experience gained this summer will no doubt be of definite advantage in combating disease in succeeding years.

SANATORIUM FOR DISEASES OF THE NERVOUS SYSTEM. — According to *American Medicine*, the late Baron Nathaniel Rothschild left upwards of four million dollars to be used for the establishment of a sanatorium for the treatment of affections of the nervous system. It is to be hoped that this project includes the treatment of all nervous affections and not merely those of a mental character.

APPOINTMENT OF DR. FLORENCE R. SABIN. — The appointment of Dr. Florence R. Sabin to an associate professorship of anatomy at the Johns Hopkins Hospital is announced. Dr. Sabin was a graduate of Smith College and later of the Johns Hopkins Medical School and is widely known for her work in anatomy, particularly in relation to the nervous system.

A NEW MEDICAL SCHOOL. — It is stated that the University of Kansas is about to establish a medical department. It is expected that temporary buildings for the use of the medical faculty will be ready for occupancy in the fall.

A MEDICAL ASSOCIATION IN ALASKA. — A medical association to be known as the Northwestern Alaska Medical Association has recently been organized at Nome with about ten charter members.

A REGIUS PROFESSOR'S LAY SERMONS. — Under the title, "A Regius Professor's Lay Sermons," the *British Medical Journal* comments editorially on Dr. Osler's recently published volume, "Aequanimitas." The highly appreciative notice closes with the following words:

"Want of space will not allow us to do more than skim the surface of a book which is a deep mine of golden counsel. It should be read by every one who thinks of taking up medicine as

a profession, by every medical student, and by every practitioner. The young will get from it inspiration and encouragement, and their elders will find much sound advice that will help them to meet with an unruffled brow the manifold difficulties, annoyances and trials of practice."

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, July 5, 1905, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 23, scarlatina 9, typhoid fever 7, measles 33, tuberculosis 34, smallpox 0.

The death-rate of the reported deaths for the week ending July 5, 1905, was 15.80.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, July 1, 1905, was 181, against 180 the corresponding week of last year, showing an increase of 1 death, and making the death-rate for the week 15.37. Of this number 107 were males and 74 were females; 176 were white and 5 colored; 118 were born in the United States, 60 in foreign countries, and 3 unknown; 35 were of American parentage, 116 of foreign parentage, and 30 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 34 cases and 3 deaths; scarlatina, 13 cases and 1 death; typhoid fever, 5 cases and no deaths; measles, 36 cases and 1 death; tuberculosis, 40 cases and 24 deaths; smallpox, no cases and no deaths. The deaths from pneumonia were 17, whooping cough 0, heart disease 21, bronchitis 5, and marasmus 1. There were 12 deaths from violent causes. The number of children who died under one year was 37; the number under five years, 51. The number of persons who died over sixty years of age was 31. The deaths in public institutions were 70.

Cases of cerebrospinal meningitis reported for the week were 4, the deaths, 5.

The Boston Floating Hospital. — The Board of Managers of the Boston Floating Hospital announce the opening of the season of 1905 on Thursday, July 6.

Trips down the harbor will be made daily (weather permitting), except on Sundays, from July 6 to a date in September to be determined later. On Sundays, every night, and up to eight o'clock in the morning, patients will be admitted to the hospital at the station, Pickert's Wharf, New Street, East Boston, near North Ferry. The daily trips will be made from City Wharf, South Ferry, Eastern Avenue, the hospital leaving at 9.30 A.M., and returning about 4 P.M. Patients will be received at these hours.

The age limit for patients is six years. The requirement for admission is a certificate signed by a physician, which may be obtained from the Floating Hospital Office, 178 Devonshire Street, Room 505, from any of the dispensaries and hospitals in the city, and from physicians and agents of charity organizations in the city proper as well as in Greater Boston.

NEW YORK.

County Sanitarium for Tuberculosis. — The Health Department, through its president, Dr. Darlington, has at last succeeded in securing a suitable site for the proposed county sanitarium for tuberculosis patients. This is in Orange County, in the vicinity of Middletown.

Yale Infirmary Fund. — Among the gifts to the infirmary fund, which President Hadley of Yale announced at the recent alumni meeting, was $40,000 from Mrs. William H. Hurlbut and the Misses Dimock and Jennings of New York.

Children's Playgrounds and Athletic Fields. — At a previous meeting of the Board of Estimate $1,000,000 was appropriated for children's playgrounds and $300,000 for athletic fields. These are to be located in thickly populated districts in the various boroughs, other than Manhattan.

Appropriation for Draining Swamps and Marshes. — On June 30 the Board of Estimate and Apportionment passed an appropriation of $17,000 for the use of the Health Department in draining swamps and marshes and other measures for the extermination of mosquitoes in the Borough of Richmond (Staten Island). During a recent trip which Mayor McClellan recently made, in company with Commissioner Darlington and Dr. Doty, Health Officer of the Port, to the breeding places of the insects in the island, he was impressed with the desirability of carrying out this work, and at the meeting of the Board of Estimate he strongly urged the appropriation. Circulars have now been distributed by the Health Department among the residents of Staten Island, inviting their co-operation.

Fordham Home for Incurables. — The thirty-ninth anniversary of the establishment of the New York Home for Incurables, at Fordham in the Borough of the Bronx, was celebrated on June

10, when the annual reports were presented and an entertainment given to nearly three hundred patients. Among the gifts received during the year were $7,500 from Mrs. Joseph M. White and $5,000 from the Mary Hoyt estate for free beds in perpetuity.

APPOINTMENT OF TENEMENT-HOUSE COMMISSIONER. — The Mayor has appointed Edmund J. Butler, Tenement-House Commissioner, to succeed Thomas C. T. Crain, who recently resigned. It is understood that the appointment was strongly recommended by Robert W. De Forest, the first head of the new Tenement-House Department, who has been associated in charitable and reform work with Mr. Butler. The latter is vice-president of the New York branch of the St. Vincent de Paul Society and also of the National Council of that body. Last year he was secretary of the State Conference of Charities and Correction, and a short time since he was appointed by Governor Higgins, a member of the board of managers of the State Hospital for the insane at Central Islip, Long Island.

Miscellany.

THE INCREASE OF ANTHRAX.

THE increase in the average annual number of cases of anthrax during the past few years is a matter calling for serious attention from our public health authorities. In the decade ending in 1893, the average annual number of deaths from anthrax was only nine, whereas in the following decade it had increased to fourteen. At first sight one might suggest that the increase was apparent, not real, being due to more exact diagnosis and more careful registration. This explanation is rendered unlikely, however, by the fact that not merely are the absolute numbers of cases of the disease and of death therefrom increased, but there is a still more marked increase in the number of epizootic outbreaks. During the five years ending in 1893, the average annual number of outbreaks was 279, whereas in recent years it has risen to 640, and in the first quarter of the present year there were no less than 278. These figures make clear that the increase of the disease is not merely due to an increase of the importation of infected material for industrial purposes, but is due to a widespread infection of animals throughout the country. It is difficult to account for this wide distribution, since in the great majority of cases the source of infection cannot be traced. That the disease among animals has no relation to the presence of industries which might be a source of infection is shown by the geographical distribution. The counties which show the highest rates of epizootic anthrax are not those where industrial anthrax is found, and on the other hand, in many localities where industries associated with anthrax are situated, there is no occurrence of the epizootic disease. In Scotland, for instance, taken as a whole, anthrax among animals is much more common than in England, whereas it rarely occurs in man as a result of industrial infection in the former country. It has been suggested that the spread of anthrax may be caused by the manuring of fields with infected material, but of this there is little proof. There is a gradual decrease in the total area of manured land, whereas there is an increase in anthrax. Professor Delepine has shown, however, from a study of reported outbreaks in Cheshire that the disease tends to recur with increasing frequency in limited areas. Nevertheless, he does not believe that the carriage of infected manure or the importation of infected food stuffs is a factor of great importance in the spread of the disease. It must be borne in mind, however, that the infection may persist for a considerable time on contaminated soil, and may be conveyed by grass, hay, grain, or other crop grown thereon. It is not believed that with sufficiently deep burial of carcasses there is great risk of infecting the soil, but it is well that cremation should, when practicable, be substituted for earth burial. It is unfortunate that at present the public health authorities have no efficient means of informing themselves of the presence of anthrax in an agricultural community. There is an obligation to notify cases occurring in a workshop or factory, but none with regard to cases occurring elsewhere. There seems to be no adequate reason why anthrax should not be one of the diseases notifiable under the Infectious Diseases Notification Act. — *Medical Press.*

RESOLUTIONS IN MEMORY OF THE LATE DR. L. C. SWIFT, ADOPTED BY THE BERKSHIRE DISTRICT MEDICAL SOCIETY AT THE REGULAR MEETING HELD JUNE 29, 1905.

LAWRENCE CHEW SWIFT, M.D., was born at Geneva, N. Y., Feb. 14, 1852. He received his preparatory education at New Brunswick, N. J., and his medical degree from the College of Physicians and Surgeons, New York, in 1878; after which he served for two years as interne at the Charity Hospital, New York. He first engaged in practice in Des Moines, Iowa, where he remained until 1887, when he returned to the East broken down in health by a severe attack of pneumonia. The following year he took up his residence in Great Barrington, Mass., and in 1889 removed to Pittsfield, where he resided until his death.

He became a member of the Massachusetts Medical Society in 1890, was secretary of the Berkshire District Medical Society for ten years, and was also a councillor. He was one of the visiting staff of the Pittsfield House of Mercy, and and had been, since 1901, assistant medical examiner for the Central Berkshire District.

As a man, Dr. Swift was singularly high minded

and conscientious, one who could be absolutely trusted in all things. Honorable, unselfish and helpful in his relations with his professional brethren, he had the faculty of making and keeping friends. As a medical practitioner he was highly educated, and, by constant study, kept himself well abreast of the times. All of his work was characterized by thoroughness and a painstaking attention to details which constantly led to good results. His specialty was gynecology, but he also gave much time and attention to general surgery. He performed many operations at the House of Mercy and elsewhere, in all of which his careful and patient attention to the minutest details commanded admiration. He gave much attention to chemical and microscopic work, was a most skilful accoucheur and a family physician wno was beloved and trusted by all of his patients.

As secretary of the Berkshire District Medical Society he was invaluable. His records were accurate and copious, and every detail of preparation for meetings, correspondence, etc., was attended to with the carefulness and precision which were characteristic of him.

The time had come when he should have been president of the Berkshire District Medical Society, but he modestly declined to be a candidate, preferring to serve the Society as its secretary to accepting an office of more honor and less usefulness.

The members of the Berkshire District Medical Society desire to place on record their appreciation of the high qualities of the friend whose death they deeply mourn.

J. F. A. Adams,
W. M. Mercer,
Henry Colt,
Committee on Resolutions.

Correspondence.

BROWN TAIL MOTH ERUPTION.

Boston, July 3, 1905.

Mr. Editor: I have been asked so many times recently in regard to the treatment of the brown tail moth eruption that a letter seems the best way of answering. In general, it may be said that the eruption should be treated on the same lines as urticaria, that is, by antipruritic and soothing applications. As a rule, lotions give greater relief than ointments. It is necessary also that the lotion should be applied frequently and freely and the sooner its use is begun the sooner relief follows. It is important that the patient should restrain his desire to scratch as much as possible, for by scratching he not only aggravates the attack, but also delays relief. I have seen an attack which promised to be severe allayed in a few hours by prompt applications and an entire avoidance of scratching. In particular, I may say that any antipruritic, of which there are many, may be employed. To mention only a few, one of the best is: Ac. Carbol. 2–4, Zinc. Oxidi 15, Aq. Calcis 500. M. Shake and daub on with a soft cloth. Chloral Hydrat. 4., Ac. Carbol. 2,. Aq. Camphoræ, Alcohol āā 125. applied in the same way, is also effective. In addition it may be mentioned that alcohol, menthol, thymol, hamamelis and a host of other drugs, chiefly antiseptics, have been used. In severe cases alkaline and bran baths will be found of great service.

Yours truly,

Harvey P. Towle, M.D.

RECORD OF MORTALITY

For the Week ending Saturday, June 24, 1905.

Cities.	Population Estimated, 1904.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious disease.	Acute lung disease.	Diphtheria and croup.	Typhoid Fever	Cerebro-spinal Menin-gitis.
New York . .	3,990,644	1,202	336	33.02	11.67	1.84	.66	2.61
Chicago . . .	1,999,739	422	109	24.37	9.11	.68	1.13	.45
Philadelphia	1,467,389	451	154	31.48	7.09	.66	3.10	.44
St. Louis . .	633,636	—	—	—	—	—	—	—
Baltimore . .	549,229	220	85	35.90	4.54	.91	.45	.45
Cleveland . .	444,251	—	—	—	—	—	—	—
Buffalo . . .	400,845	—	—	—	—	—	—	—
Pittsburg . .	353,405	—	—	—	—	—	—	—
Cincinnati . .	338,377	—	—	—	—	—	—	—
Milwaukee . .	325,980	—	—	—	—	—	—	—
Washington .	300,776	—	—	—	—	—	—	—
Providence .	198,744	68	10	20.69	9.43	1.89	—	—
Boston . . .	617,339	201	49	15.41	9.94	.99	.50	2.48
Worcester . .	136,995	33	9	15.15	—	3.03	—	—
Fall River . .	119,349	32	15	12.50	12.50	—	—	—
Lowell . . .	104,402	31	6	22.58	22.58	—	—	—
Cambridge . .	100,698	27	10	18.51	3.70	—	—	—
Lynn	73,675	18	2	5.55	—	—	—	5.55
Lawrence . .	72,349	23	7	21.74	17.39	—	—	—
Springfield .	72,090	13	2	7.70	—	7.70	—	—
Somerville .	70,413	10	1	30.00	—	10.00	—	—
New Bedford	68,883	17	6	35.29	5.88	—	—	—
Holyoke . . .	50,598	11	6	36.36	—	9.09	—	—
Brockton . .	46,601	11	1	18.18	—	—	—	9.09
Newton . . .	39,310	11	1	18.18	9.09	—	—	—
Haverhill . .	39,081	9	1	—	—	—	—	—
Malden . . .	37,905	13	3	23.10	—	—	—	—
Salem	37,188	11	2	—	—	—	—	—
Chelsea . . .	36,499	14	2	28.57	—	—	—	—
Fitchburg . .	36,295	9	0	—	—	—	—	—
Taunton . . .	34,577	—	—	—	—	—	—	—
Everett . . .	30,309	5	2	—	—	—	—	—
North Adams	20,301	7	1	14.30	—	14.30	—	—
Quincy . . .	26,788	7	4	28.60	—	—	—	14.30
Gloucester .	26,121	—	—	—	—	—	—	—
Waltham . .	25,797	6	2	33.33	16.67	—	16.67	16.67
Brookline . .	23,576	10	2	—	—	—	—	—
Pittsfield . .	23,570	4	1	25.00	—	—	—	—
Medford . .	21,956	3	1	—	33.33	—	—	—
Chicopee . .	21,622	9	5	11.1	22.22	—	—	—
Northampton	20,514	8	2	12.50	—	—	—	—
Beverly . . .	15,807	3	1	—	—	—	—	—
Leominster .	15,711	—	—	—	—	—	—	—
Clinton . . .	15,694	3	0	—	—	—	—	—
Adams . . .	14,745	4	2	25.00	—	—	—	—
Attleboro . .	14,551	—	—	—	—	—	—	—
Hyde Park . .	14,509	3	1	33.33	—	33.33	—	—
Newburyport	14,478	3	0	33.33	—	—	—	33.33
Woburn . . .	14,315	2	0	—	50.00	—	—	—
Melrose . . .	13,519	6	0	—	—	—	—	—
Westfield . .	13,509	1	—	—	—	—	—	—
Milford . . .	13,771	—	—	—	—	—	—	—
Marlboro . .	13,509	4	—	—	25.00	—	—	—
Revere . . .	13,509	4	1	25.00	—	—	—	—
Framingham	13,974	—	—	—	—	—	—	—
Peabody . .	13,403	—	—	—	—	—	—	—
Gardner . . .	13,324	—	—	—	—	—	—	—
Southbridge .	11,716	2	1	50.00	—	—	—	—
Watertown .	11,575	2	1	50.00	—	—	—	—
Weymouth .	11,350	3	2	—	—	—	—	—
Plymouth . .	11,139	—	—	—	—	—	—	—

Deaths reported, 3,050; under five years of age, 1,046; principal infectious diseases (smallpox, measles, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 870; acute lung diseases 283, consumption 345, scarlet fever 13, whooping cough 18, cerebrospinal meningitis 49, smallpox 3, erysipelas 11, puerperal fever 14, measles 35, typhoid fever 28, diarrheal diseases 313, diphtheria and croup 41.

From whooping cough, New York 8, Chicago 7, Philadelphia 1, Baltimore 1, Newton 1. From scarlet fever, New York 9, Chicago 2, Boston 1, Somerville 1. From cerebrospinal meningitis, New York 34, Chicago 2, Philadelphia 2, Baltimore 1, Boston 5, Lynn 1, Brockton 1, Quincy 1, Waltham 1, Newburyport 1. From erysipelas, New York 4, Chicago 3, Philadelphia 1, Baltimore 1, Boston 1, Worcester 1. From smallpox, Chicago 3.

In the seventy-six great towns of England and Wales, with an estimated population of 15,609,377, for the week ending June 17, 1905, the death-rate was 13.4. Deaths reported 4,016; acute diseases of the respiratory organs (London) 73, whooping cough 77, diphtheria 32, measles 134, smallpox 2, scarlet fever 25.

The death-rate ranged from 5.1 in Handsworth to 23.3 in Tynemouth; London 13.2, West Ham 13.1, Brighton 8.2, Southampton 16.3, Plymouth 16.2, Bristol 16.0, Birmingham 13.3, Leicester 11.7, Nottingham 14.1, Birkenhead 17.1, Liver-

pool 14.6, Wigan 20.5, Bolton 11.1, Manchester 15.1, Salford 15.5, Halifax 10.6, Bradford 11.6, Leeds 11.4, Hull 13.3, Sheffield 13.9, Newcastle-on-Tyne 17.3, Cardiff 12.5, Rhondda 16.7, Merthyr Tydfil 19.1, Great Yarmouth 8.0.

METEOROLOGICAL RECORD.

For the week ending June 24, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

DATE	Barometer.	Thermometer.			Relative humidity.			Direction of wind.		Velocity of wind.		We'th'r *		Rainfall in inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A.M.	8.00 P.M.	Daily mean.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	
S. . 18	29.94	80	90	71	77	74	76	S W	S W	10	8	O.	O.	.07
M. 19	30.10	64	77	50	100	100	100	N E	E	12	13	R.	R.	.55
T. . 20	30.12	52	54	51	87	99	93	E	E	9	8	R.	R.	T
W. 21	29.98	55	57	53	91	100	96	E	E	5	7	R.	R.	.78
T. . 22	29.84	63	70	56	98	98	97	W	N	4	7	O.	O.	.47
F. . 23	30.01	72	79	66	67	64	66	N	W	7	4	F.	O.	.02
S. . 24	30.06	70	78	62	82	57	54	N W	S W	5	9	O.	C.	.0
Σ	30.00		79	58			80							2.25

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. Σ Means for the week.

OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING JUNE 21, 1905.

GEDDINGS, H. D., assistant surgeon-general. To proceed to Baltimore, Md., for special temporary duty. June 13, 1905.

EAGER, J. M., assistant surgeon-general. Granted leave of absence for nine days from June 30. June 21, 1905.

PECKHAM, C. T., surgeon. Granted leave of absence for twenty days from July 10. June 17, 1905.

KORN, W. A., passed assistant surgeon. Granted leave of absence for one day, June 27. June 20, 1905.

CLEAVES, F. H., acting assistant surgeon. Granted leave of absence for twenty-three days from July 10. June 21, 1905.

DREW, A. D., acting assistant surgeon. Granted leave of absence for four days, under paragraph 210 of the regulations.

HAMMOND, A. P., acting assistant surgeon. Granted leave of absence for fourteen days from June 17. June 17, 1905.

KEATLEY, H. W., acting assistant surgeon. Granted leave of absence for one day, June 22. June 21, 1905.

MCCORMAC, J. T., acting assistant surgeon. Granted leave of absence for fifteen days from July 9. June 20, 1905.

RICHARDSON, N. D., acting assistant surgeon. Granted leave of absence for five days from June 12, 1905, under paragraph 210 of the regulations.

WALKLEY, W. S., acting assistant surgeon. Granted leave of absence for nine days from June 27. June 21, 1905.

ACHENBACH, J., pharmacist. Granted leave of absence for thirty days from May 15 on account of sickness. June 21, 1905.

GIBSON, F. L., pharmacist. Granted leave of absence for twelve days from June 18. June 16, 1905.

HOLT, E. M., pharmacist. Granted leave of absence for twenty-nine days from July 3. June 17, 1905.

BOARDS CONVENED.

Board convened to meet at the marine hospital, Boston Mass., for the physical examination of an officer of the Revenue Cutter Service, June 21, 1905. Detail for the board: Surgeon R. M. Woodward, chairman; Assistant Surgeon W. C. Rucker, recorder.

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING JULY 1, 1905.

J. B. DENNIS, surgeon. Detached from Bureau of Medicine and Surgery, and ordered to Navy Yard, Pensacola, Fla.

G. H. FISKE, passed assistant surgeon. Detached from Naval Medical School, Washington, D.C., June 27, and ordered to the "Marblehead."

M. S. GUEST, surgeon. Detached from the "Lancaster," and ordered to the Naval Training Station, Newport, R. I., with additional duty on the "Constellation."

F. W. F. WIEBER, surgeon. Ordered to Navy Yard, Pensacola, Fla., and to additional duty in command of the Naval Hospital at that yard.

L. L. VONWEDEKIND, surgeon. Detached from the Naval Training Station, Newport, R. I., and ordered to the "Lancaster."

H. O. SHIFFERT, passed assistant surgeon. Detached from duty under instruction at Naval Medical School, Washington, D. C., and ordered to the Naval Hospital, Philadelphia.

H. H. TOLFREE, passed assistant surgeon. Detached from duty under instruction at Naval Medical School, Washington, D. C., and ordered to the Navy Yard, Norfolk, Va.

J. H. IDEN, passed assistant surgeon. Orders of June 27, modified; ordered to Naval Hospital, Newport, R. I.

F. H. BELL, passed assistant surgeon. Detached from duty with the Marine Detachment on the Isthmus of Panama, and ordered to the "Dixie."

A. A. ANGWIN, assistant surgeon. Detached from the Naval Academy, and ordered the "Massachusetts."

F. S. HORN, assistant surgeon. Detached from the "Marblehead," and ordered to the "Chicago."

R. K. MCCLANAHAN, assistant surgeon. Discharged from treatment at the General Hospital, Fort Bayard, N. M., and ordered to the Naval Recruiting Station, Baltimore, Md.

N. H. BROWN, assistant surgeon. Detached from the "Chicago," and ordered to the Navy Yard, Hare Island, Cal.

P. F. MCMURDO, acting assistant surgeon. Detached from the Naval Recruiting Station, Baltimore, granted leave for one month, and ordered then to wait orders.

R. SPEAR, surgeon. Detached from the Naval Hospital, Washington, D.C., and ordered to St. Petersburg, Russia, for special duty in connection with the naval medical and sanitary features of the Russo-Japanese war.

B. L. WRIGHT, passed assistant surgeon. Detached from the Naval Hospital, Pensacola, Fla., and ordered home to await orders.

R. H. MICHELS, assistant surgeon. Detached from the "Wilmington," and ordered home via the "Lawton."

H. F. STRINE, assistant surgeon. Detached from the "Barry," and ordered home via the "Lawton."

C. C. GRIEVE, assistant surgeon. Detached from the Naval Station, Guam, and ordered to the "Oregon."

G. E. STRITE, detached from the "Lawton," and ordered to duty on the torpedo boat flotilla with station on the "Barry."

R. E. STOOPS, assistant surgeon. Detached from the "Lawton" and ordered to the Naval Station, Olongapo, P. I.

W. D. CRONA, assistant surgeon. Detached from the "Lawton," and ordered to the "Villalobos."

RECENT DEATHS.

LOUIS AURELE PREFONTAINE, M.D., M.M.S.S., died in Springfield, June 19, 1905, aged thirty-nine years.

Dr. WALTER BRYAN of New York died suddenly on June 26, at the age of thirty-eight years. He was graduated from the medical department of the University of New York in 1890.

BOOKS AND PAMPHLETS RECEIVED.

Atlas and Text-Book of Topographic and Applied Anatomy. By Oskar Schultze. Edited, with additions, by George D. Stewart, M.D. Illustrated. Philadelphia and London: W. B. Saunders & Co. 1905.

A Text-Book on the Practice of Gynecology. For Practitioners and Students. By William Easterly Ashton, M.D., LL.D. Illustrated. Philadelphia and London: W. B. Saunders & Co. 1905.

Nothnagel's Practice. Malaria, Influenza and Dengue. By Dr. Julius Mannaberg and Dr. O. Leichtenstern. Edited, with additions, by Major Ronald Ross, F.R.C.S., F.R.S., C.B., J.W.W. Stephens, M.D., D.P.H., and Albert S. Grünbaum, M.D., F.R.C.P. Authorized translation from the German, under the editorial supervision of Alfred Stengel, M.D. Philadelphia and London: W. B. Saunders & Co. 1905.

A Manual of Midwifery for Students and Practitioners. By Henry Jellett, B.A., M.D. (Dub. Univ.), F.R.C.P.I., L.M., with the assistance in special subjects of W. R. Dawson, M.D., F.R.C.P.I., H. C. Drury, M.D., F.R.C.P.I., T. G. Moorhead, M.D., and R. J. Rowlette, M.D. Illustrated. New York: William Wood & Co. 1905.

A Practical Treatise on Fractures and Dislocations. By Lewis A. Stimson, B.A., M.D., LL.D. (Yalen.). Fourth edition, revised and enlarged. Illustrated. New York and Philadelphia: Lea Brothers & Co. 1905.

Addresses.

THE AMERICAN MEDICAL ASSOCIATION: ITS ORIGIN, PROGRESS AND PURPOSE.*

BY LEWIS S. MCMURTRY, A.M., M.D., LOUISVILLE, KY.

BOTH established usage and the by-laws of this Association require the presiding officer to deliver annually an address touching such matters as he may deem of importance. In the early years of the Association the President's address was devoted to an epitome of the progress of medical science in its various departments during the preceding year. Since distinguished orators are now selected annually to perform this important service, the President's address may be more appropriately directed to subjects relating to the general welfare of the profession and to the purposes for which this great organization was established.

The annual session of the American Medical Association is always an occasion of special moment and universal interest to the medical profession of America. That several thousand physicians from all sections of our broad country assemble annually for the advancement of medical science and the elevation of our profession is a splendid testimonial to the earnestness of professional achievement and aspiration. The occasion cannot but command the respect of all who are concerned in the progress of science and the betterment of the human race. The spirit which pervades such an assemblage is the desire for improvement, for the increase of scientific resources, and for the diffusion of medical knowledge. Closely related to these ennobling purposes is that social instinct of our profession, which would elevate and be elevated by interchange of views resulting from common experiences, and by mingling together in pleasant, friendly intercourse. Happily our present meeting is held under ideal conditions for the exercise of all the functions of such an organization. Perfect harmony prevails. The differences which at times have divided us have all been satisfactorily adjusted; and we are to-day as one man in our united effort to advance the science of medicine, to enlarge the scope of its beneficence, and to promote the welfare of our profession.

Since our meeting at Atlantic City one year ago, many of our members have ceased their labors and passed to the great beyond. The list is a long one. Among the number is that of Nathan Smith Davis. He was one of the founders of this Association, an ex-president; a member of the Board of Trustees, the first editor of the *Journal*, and for years a power for good in its affairs. He lived beyond the time allotted by the Psalmist, and all his years were filled with labor and with honor. I will not undertake at this time to estimate adequately his great services, or appropriately to pay tribute to his memory. This will be done later in the session by one better prepared than I to eulogize our departed leader.

At our last session, Dr. B. C. Pennington of Atlantic City was chairman of the Committee of Arrangements. He was honored with the fourth vice-presidency in recognition of his ability, his high professional standing and his devoted services to this Association. His name, too, is now found among the year's honored dead. A cultured gentleman, a learned and accomplished physician, his memory will ever remain as an inspiration for high ideals and noble endeavor.

EARLY YEARS.

When the American Medical Association was organized in 1846 it is doubtful if there were more than 25,000 physicians in the entire United States of America. It was organized as a representative body, composed of delegates from affiliated societies, colleges and hospitals throughout the states. It was a body of delegates from all state, district, county and other medical societies which adopted the code of ethics of the national association. The apportionment of delegates was on a basis of one for every ten members of the societies represented. For a number of years the delegate body thus constituted was not too large for the discussion of important subjects and the ready transaction of business.

With the rapid increase in population, the admission of new states to the Union, and the settlement of new territories, came a vast increase of physicians, with a corresponding multiplication of state and county societies. Without change in the apportionment of delegates, the national association developed into a body too large and unwieldy for the transaction of business. Indeed, during the latter years under the original system of organization, practically every member in attendance on the annual sessions was a delegate. While the work of the sections was carried on with increasing excellence, the important functions relating to legislative and other matters, belonging to a great national organization of the medical profession, were neglected. The general sessions brought together hundreds of delegates, forming a convention so large that thorough discussion of important questions and judicious action on the same became practically impossible. Moreover, the delegates attending the annual sessions constituted a body annually changing in *personnel;* and the sources of attendance changed with the sections of the country in which the meetings were held. In consequence there could be neither that equal representation of all sections which must obtain in a national body, nor continuation of work from year to year along definite lines.

THE SECTIONS.

During these early years it was the steady improvement in the work of the sections which drew the best element of the profession to the annual sessions. Many leaders of the profession in the various states attended the sections in which they were interested and took no part in the proceed-

* President's address at the fifty-sixth annual session of the American Medical Association at Portland, Ore., July 11–14, 1905. Published through the courtesy of the *Journal of the American Medical Association.*

ings of the general meetings. The sections have now reached such a high degree of efficiency that they have attained the standard so much desired, and rank as leading special national societies in the several departments of medical science which they represent.

As chairman of the Committee on Sections and Section Work, I have carefully studied the workings of the sections. As a result of this experience, I would repeat the recommendation of my distinguished predecessor in this chair, that the secretary of each section should be elected for a term of years. No national society can maintain its efficiency which changes its secretary annually. And again, I would suggest that the officers of the several sections meet together in conference as soon as practicable after the adjournment of the session at which they are elected, in order that definite plans may be formulated for the scientific work of the next annual session. The conference of section officers in New York last November contributed much toward the development of the admirable scientific program now before you for the present session.

It should be the aim and purpose of every member of this Association to aid the officers of the sections in elevating continually the standard of scientific work. Every American physician may have pride in the work done year after year in the sections of this Association.

THE JOURNAL.

It would be a difficult task were we to undertake a definite estimate of the influence of the *Journal* in the great work which this Association has accomplished during the past two decades. When it was decided to discontinue the annual volume of transactions, and to establish a weekly journal, the change was viewed with apprehension by many. The influence of this publication, the property of the Association, in stimulating research, diffusing knowledge, elevating professional thought and conduct, and building up this great organization cannot be computed. This part of my discourse is so replete with suggestion, that I fear the time and space at my command will not permit such consideration as should be devoted to it.

The volumes of the *Journal* mark the steady and continued growth of the Association, and likewise bear testimony to the fact that the *Journal* itself has been a potent factor in that growth. Under the judicious direction of the Board of Trustees the *Journal* has steadily advanced as a scientific publication. By the untiring daily services of the present able editor, it has leaped into the very front rank of scientific publications, and in all that a great weekly medical journal should be it has no superior in the world. The power exerted by such a publication as a medium of communication among the members of the Association is inestimable, to say nothing of the other more important functions performed by a great weekly journal. It has been the most potent instrument in building up this Association to its present proud position as the largest medical organization in the world. No other American medical periodical has a circulation so distinctly national, and no other journal can sustain the same relation to the great body of the medical profession. It is a great engine whose power is constantly increasing, constantly extending. With such increased power comes increased responsibility, much of which rests with the House of Delegates in the selection of proper men to fill the responsible places of the trustees. No other office should be regarded higher in honor than that of the trustees, as no other affords greater scope for unselfish labor and efficient service to the Association. Under the conditions of our organization more power is invested in this board than the combined power of all other officers.

THE NEW ERA.

At the annual session of 1900 a committee on reorganization was appointed, and one year later, at St. Paul, the report of the committee was submitted and adopted. It included a new constitution, which altered the basis of apportionment for delegates, so as to reduce the delegate body to 150, and definitely established a close relationship between the national organization and the state, district and county societies. For the first time a practical scheme of complete organization of the medical profession of the United States was provided. This is the fourth annual session held under the new plan of organization.

Previous to the reorganization, the valuable scientific work of the sections constituted almost the sum total of the effective work accomplished by the Association. Matters appertaining to medical education, to the public health, to national legislation, and to the welfare of the profession received no deliberate consideration; and in consequence no decisive action was carried out. This condition existed for the reasons already mentioned. In a word, the very objects and aims for which the Association was organized were thwarted by the growth of the Association into an unwieldly delegate body. Under the reorganization, the House of Delegates, in which the membership of the state societies is proportionately represented, now gives deliberate consideration to those important matters, already indicated, which under the former organization were neglected.

The influence of the revised plan of organization was immediately apparent in the increased attendance at the annual sessions, and the stimulus felt in every purpose of the Association. And each year this influence has grown, until some idea can now be formed of the great possibilities to come from organization on a definite and practical plan. The good results to accrue to the profession as a whole, and to every member as an individual, are so positive that no subject can deserve more careful consideration by this body than that of medical organization. Indeed, it is the fundamental question before us, and on

its decision depend the results of all our other efforts in all directions.

In order that we may thoroughly appreciate the origin and purposes of the Association, and thereby be better prepared to meet its present and future requirements, I have very imperfectly outlined the history of its earlier years. During the more than half century of its existence it has always brought to its councils the ablest and best men in the profession of America. Among its leaders from the beginning are found the most eminent physicians and surgeons of the day. In the list of its active members are the names of Samuel D. Gross, Paul F. Eve, Austin Flint, Marion Sims, N. S. Davis, Alfred Stillé, Lewis A. Sayre, and many others which adorn the annals of American medicine. It has from the beginning been a great power with the profession of America. Its greatest influence, as I have already indicated, was in the growth and diffusion of scientific knowledge through the splendid work of the sections. In elevating medical education, in promoting legislation and advancing the powers of public health organizations its influence was most felt in the development of a helpful public professional opinion. The extension of the influence and advantages of organization to the masses of the profession was gradually lost sight of in the annual meetings, and the work relating to matters of public policy was spasmodically considered and imperfectly executed. Whatever was accomplished along these lines worthy of mention was the work of committees. The necessity of reorganization was appreciated by the leading members of the Association long before it was accomplished. In 1888, Dr. N. S. Davis, as chairman of a committee appointed for the purpose, reported a scheme of reorganization very similar to that adopted in 1901 at St. Paul.

ORGANIZATION.

The object of this Association shall be to federate into one compact organization the medical profession of the United States, for the purpose of fostering the growth and diffusion of medical knowledge, of promoting friendly intercourse among American physicians, of safeguarding the material interests of the medical profession, of elevating the standard of medical education, of securing the enactment and enforcement of medical laws, of enlightening and directing public opinion in regard to the broad problems of state medicine, and of representing to the world the practical accomplishments of scientific medicine. (Article II, Constitution of the American Medical Association.)

If every physician worked alone, relied on his own unaided observation for his knowledge, never looking outside his own scope of view, ignorance would prevail and there would be no progress in medical science. Medicine is not an exact science, and until perfected by extorting from Nature all her secrets, it must from the nature of things continue to be a progressive science. Never before in the history of medicine has such marked progress in all its departments been made as during the present age. Theories have been supplanted by facts; laboratory research and clinical investigation have taken the place of tradition and authoritative opinion. To rely on the accomplishments of the college period is to be left behind in hopeless incompetency. The advance of medical knowledge is to be observed first in our medical societies, and afterward in our scientific medical journals. In the medical societies innovations are subjected to criticism and discussion by those competent to judge the merits of scientific contributions. Moreover, there is a stimulus to study and investigation from association with workers in the same field; and one obtains a broader view of every subject so considered. The physician, more than any other professional man, is isolated by the conditions of his life, and to no profession is the educating influence of society work so essential and invaluable. This same condition of isolation is at the foundation, for the most part, of the jealousies and petty bickerings so prevalent in our profession. These troubles are, as a rule, the result of misunderstandings, and are both prevented and corrected by coming together in a society composed of physicians. The lonely worker in any calling is prone to become narrow, suspicious and morbid. Our medical societies are the great post-graduate schools of the profession, where knowledge is increased and individual character developed.

But the promotion of scientific investigation, and the diffusion of medical knowledge are not the only objects of organization. Our profession has a most essential and important duty in relation to the public health. Through no other agency can municipal, state and national health authorities formulate and secure recognition of laws to prevent and control disease. Another duty, no less essential, is so to regulate and to control medical education that the ignorant and unworthy shall not be admitted to the privileges of the profession, thereby preserving the time-honored standard of professional honor and scientific capability. In this age of organization, without it the profession is powerless to secure the enactment of humane sanitary laws, by which alone the people can be protected from preventable diseases. The welfare of the profession, collectively and individually, can only be subserved by organization. Without such organization, our profession, as a body politic, will be without unanimity of sentiment or action in relation to the important scientific, ethical, and social questions which confront us; and, consequently, without influence politically, socially, or otherwise.

In the declaration of the constitution adopted at St. Paul, which I have just quoted, the American Medical Association has undertaken to place within reach of every reputable medical practitioner in the United States these incalculable advantages of medical organization.

The Committee on Reorganization appointed in 1900 has treated this subject in a masterly manner. After a careful study of the condition of the profession throughout the states with relation to organization, reports have been made to the Association showing the needs of the profes-

sion and the extent of the work required. A uniform plan of organization for state and county societies, making the county society the unit of organization, and federating all state societies in the national association in harmonious co-operation, has been prepared by the committee. The able chairman of this committee has with remarkable tact, patience and good judgment given his personal supervision to this great work in almost every state and territory. In his latest report it is announced that all the states and territories, except three, and including Hawaii and Porto Rico, are now organized on a practically uniform plan, with universal local societies, and coincident membership in them and the state associations as the cardinal feature. To illustrate the magnitude of this work, I mention that, under the stimulus of reorganization after the plan of the committee, the Michigan State Medical Association increased in membership in one year from 452 to about 2,100. Texas increased the membership in the same time from 382 to 2,510, while several states quadrupled their membership. While these results are phenomenal, and elicit our admiration, it will be realized how much remains to be done when it is considered that few of the states have over 50% of the eligible members of the profession enrolled as members of the society. Indeed, the work is yet almost in its infancy. What has been accomplished is an assurance for the future; and, considering the brief time since reorganization began, is a high tribute to the enterprise of the national association and the work of its able and efficient committee. The possibilities of this work are stupendous, and as it proceeds the Association can confidently undertake the great reforms of such incalculable moment to the profession and the public. In his official report to the House of Delegates one year ago, the chairman of the Committee on Organization, after reporting the splendid results of his labors during the year, said:

> The real test of our organization will come in each state when the first outburst of enthusiasm has passed, and county societies, the foundation for everything, are likely to disappear as rapidly as they have been formed, unless their usefulness to the rank and file of the profession can be demonstrated in a very broad way.

In recognition of this fact, it is of the utmost importance that the personal attention so effectively given to this work throughout the states by the chairman of the committee be continued.

MEDICAL EDUCATION.

When the American Medical Association was founded in May, 1846, the delegates assembled in response to the following preamble and resolutions of the Medical Society of the State of New York:

WHEREAS, It is believed that a national convention would be conducive to the elevation of the standard of medical education in the United States, and

WHEREAS, There is no mode of accomplishing so desirable an object without concert of action on the part of the medical societies, colleges and institutions of all the states, therefore be it

Resolved, That the Medical Society of the State of New York earnestly recommends a national convention of delegates from medical societies and colleges of the whole Union, to convene in the city of New York, on the first Tuesday in May, in the year 1846, for the purpose of adopting some concerted action on the subject, set forth in the foregoing preamble.

From this it is apparent that the Association was founded with the avowed and specific purpose of elevating the standard of medical education in this country. This subject has constantly received consideration from the Association throughout the years of its existence; and while no distinct and positive reform marks its action, the perpetual demand for improvement undoubtedly molded the public sentiment of the profession which ultimately stimulated action on the part of the medical colleges. Since the addresses of my two distinguished predecessors, who immediately preceded me in this chair were devoted to the consideration of medical education, I shall only make brief allusion to this subject. The several national organizations and the many state boards which are now dealing with this important professional problem invest the changing conditions with peculiar interest. The present is a transition period in the advancement and reform of medical education in America.

The consideration of this subject in the House of Delegates culminated in the establishment last year of the Council on Medical Education of the American Medical Association. During the past year the council has taken up its work with exceptional energy and good judgment, and is directing its efforts along most practical lines. The first annual conference was held in Chicago April 20, last. Representatives of many state examining and licensing boards, of the American and Southern Medical College associations, and of the government medical services, attended and participated in the discussions of the papers presented. The plan and scope of the work of the council can be best appreciated by a consideration of this extract from the address of the distinguished chairman of the council delivered to the conference:

> What we need is co-operation, especially the co-operation between the medical profession, represented by the American Medical Association, and the state and county medical societies, and the state authorities, represented by the state licensing and examining boards. The most important question, therefore, before this conference is, How can the American medical profession and the state licensing bodies co-operate to elevate and control medical education? It is believed that such co-operation is possible. In such co-operation it will be the function of the American Medical Association to represent and possibly mold the opinion of the medical profession, and employ its influence and the influence of the county and state medical societies in obtaining proper medical legislation. In such co-operation it will be the function of the state licensing bodies to protect the interests of the public and the profession by seeing that the medical laws are properly interpreted and enforced, and from their intimate knowledge with the medical acts they can

often be of service in securing or modifying medical legislation.

It is not the purpose of the Council on Medical Education of the American Medical Association to attempt to arrogate to itself any special powers, nor does it desire either to criticize or interfere in any way with any of the agencies which are already in the field. If its creation is to result in good, it must be the means of obtaining co-operation beween the medical profession and the medical schools, the colleges of arts, the state examining boards, the government services and all the factors which are interested in elevating and controlling medical education.

By securing co-operation of the various state and national bodies engaged in this important work, recognizing the varied interests involved in the numerous states of the Union, and fostering an intelligent public sentiment, so essential for every great reform, the influence of the Association will be of the most effective character.

MEDICAL LEGISLATION.

Chapter VII, Section 3, of the By-Laws provides a permanent committee on Medical Legislation "to represent before Congress and elsewhere the wishes of this Association regarding any proposed legislation that in any respect bears on the promotion and preservation of the public health, or on the material or moral welfare of the medical profession." This committee was appointed in 1903, and under the leadership of its accomplished and energetic chairman proceeded at once to organize the auxiliary committee provided in the by-laws. This being a permanent committee, its work will be continued from year to year. With the auxiliary committee, representing every state in the Union, and the several medical departments of the Government service, every representative of the people in Congress can be reached directly. The importance of this work is so apparent that I need only call attention to it at this time, and urge on all members of the Association the necessity of aiding and co-operating with the committee at all times. The disregard of the good work of the medical profession in the public service (to say nothing of the indignities offered) on the part of Congress is notorious; and it is only by such concentrated power of the profession, intelligently directed, that such injustice may be overcome. I commend to your consideration the report of this committee in order that you may appreciate the important work already projected.

COUNCIL ON PHARMACY AND CHEMISTRY.

The use of proprietary medicines in the treatment of diseases has become one of the most confusing and demoralizing questions of the day. All proprietary medicines must not be classed as secret nostrums, for there are many honestly made and ethically advertised proprietary preparations that have therapeutic value and that deserve the approval of the medical profession. But there are many preparations offered the profession which are protected by copyright or trademark, with formulæ more or less fictitious, and for which are made extravagant claims, which are in fact secret remedies. These preparations are so exploited by the manufacturer that the physician is persuaded to use them instead of writing a prescription; and since they usually bear popular names and plausible therapeutic claims, they appeal to the fancy of the laity. The field is an enticing one for commercial enterprise since these preparations in many instances are simple mixtures and contain the most inexpensive drugs. The use of such remedies is both unscientific and unjust, alike to physician and to patient.

The separation of the legitimate pharmaceutical preparations from the class of fraudulent nostrums described is a most difficult undertaking. This perplexing problem forced itself from year to year on the attention of the Board of Trustees in the effort of the board to keep the advertising pages of the *Journal* free from unethical advertisements. In order to have thorough protection and to make no unjust discrimination, the board has established the Council on Pharmacy and Chemistry to make the necessary investigations. The council is composed of pharmacists and chemists of national and international reputation. It will be the aim of the council to publish in book form a list of the preparations which are not officinal, yet which conform to the proper ethical standard. The work of the council will be similar to that of the Committee on Revision of the United States Pharmacopeia.

The magnitude and importance of this work is such that I desire to direct attention to it here, and to commend it to the members of the Association as deserving every possible aid and advancement. It is the only practical way to deliver the profession from one of the greatest curses that ever came on it.

It has been my endeavor on this occasion to outline the plans of the founders of the Association, briefly to trace the evolution of those plans throughout half a century of progress, and to recount some of the purposes that invite our active exertions at the present time. From a small body of delegates our Association has increased until it is now the largest medical organization in the world. It owns valuable property, has accumulated a considerable fund, and has a large annual income, all of which belongs to, and is subject to the control of, the members who through their delegates select the Board of Trustees to manage their funds.

The possibilities of the work before us are almost beyond calculation. In acting as the representative and agent of the 120,000 physicians of the United States, the Association is assuming great responsibilities, which will increase from year to year. It will require administrative and executive ability of the highest order to meet these demands; but there is both prophecy and proof in the work already accomplished that men will appear as needed to discharge the supreme duties of a great profession in behalf of science and humanity

THE DELAY OF OLD AGE AND THE ALLEVIATION OF SENILITY.*

BY CHARLES G. STOCKTON, M.D., BUFFALO, N. Y.

IN 1805, Lewis and Clark, typical and celebrated among American explorers, turned their faces toward the furthest west and disclosed in a single expedition the possibilities of the continent and the mysteries of the great undiscovered. Their feat was in principle but a repetition of the under-undertakings of Columbus, De Soto and La Salle, of Daniel Boone and the numberless pioneers who so quickly, almost suddenly, transformed America from a desolate wilderness into the puissant commonwealth of to-day. In each we may discern a discontent with the established order and environment of his heritage; an inspiration to find in newness a satisfaction which the settled regions, settled habits of thought, settled manners of life, failed to provide him at home. The word "settled" is significant. Our race is without rest until it settles things; and with this there stalks a poignant impatience with the things that are settled. The new, the undiscovered, the unattained, the unprecedented,— this it is which charms American manhood. The Muezzin calling his prayers from a minaret in far-away Cairo, the yellow haze in the circumambient air, he camels with jingling bells, the palms turned always eastward by the hot breeze from the monotonous sands, — these possess for the western man no attraction greater than that of poetic interest. In these scenes he could never make his life. The European finds in America everywhere that which impresses him with our youth; in the Orient, he sees the indisputable evidence of age, and a settled order of things. This exploitation of new lands, the cry of "Westward ho!" which for the past few centuries has stirred mankind, is rapidly, inevitably dying out; but during the long period of its continuance it has wrought important changes in our point of view, it has stimulated a luxuriant growth of thought, it has modified considerably our nature. As our common interest has been fixed upon the untried, we have gradually come to exaggerate the importance of new truths and to ignore the meritorious which the slow moving caravan of thought has brought us from the ages.

Now, it may seem a *non sequitur*, but reflection leads one to inquire if the great appreciation which we feel for the vigorous youth spirit of recent times has not educated us to prize, perhaps to over-value, youth, to the discouragement, if not to the absolute neglect, of old age.

In saying this we are not unmindful of the element of truth in the rightly interpreted utterance on this subject of one of our most distinguished colleagues. From the standpoint of the original investigator, as from that of the soldier, or the adventurer, there is nothing to replace the effort of the man under forty; but if for no other reason than to obstruct impetuosity and to provide such a handicap that youth shall not too soon outrun the limitations which a wise Providence has provided, middle and late old age have their uses. At any rate, the old man is with us and there appears to be no acceptable method of obliterating him, even if it would add to the welfare of the race to do so.

Finding ourselves in this obvious position, it would seem the wise course so to manage that the disheartening effects of years may be as long as possible postponed; and to seek those methods by whose application we may do our utmost to minimize the terrors of senility. If youth is so delectable, let us find how it may be protracted; if old age is so beset with ineptitude, let us not rest until we learn how it may be mitigated. Such a proposal is not quite identical with a scheme for the prolongation of life — mere increase in years — although it would doubtless include this, however desirable or regrettable it might be. It has to do directly with something about whose desirability there can be no doubt. In other words, I ask your attention to the question of the practicability of *keeping* the various functions of the organism, of preserving the physical and intellectual powers, of delaying the onset of degeneration as much as may be, of developing a race less prone to early decay.

Then, besides this, I wish you to consider the feasibility of so managing the senile when once their degeneration has arrived, that many of their miseries may be avoided and the remainder lessened in degree. Having granted that age is inevitable, the average man would seem to have become indifferent to his penalty for living, and, if complainingly, he none the less heedlessly, allows his forces to ebb away prematurely. With some, the whole of existence seems to be spent in infancy, adolescence and senility. There is no period in which onec an say, "There is full, healthy maturity." When examined this early senility is found to result from pathologic processes, and there the observation ends as though it were conclusive. But the event is not thus to be disposed of, for, according to our best standards, senile changes are always pathologic, and, therefore, the question of prematurity rests on some pathologic reason for cause, or else upon inherent weakness in human vitality. We are in the habit of speaking and thinking of senility as something separate and apart from disease; as a result, not sufficient attention has been given to the question of prevention of age.

On this subject one cannot escape the bold work and bolder thought of Metchnikoff, and I quote at once his description of the degenerations of age: "In senile atrophy the same condition is always present: the atrophy of the higher and specific cells of the tissue and their replacement by hypertrophied connective tissue." It is this same process on which every teacher of medicine constantly harps in discussing disease, the disappearance of the parenchyma and the increase of the stroma.

One need not dwell on the theory of Metchnikoff as to the rôle of the phagocytes in the process;

* Oration on Medicine at the fifty-sixth annual session of the American Medical Association at Portland, Ore., July 11-14, 1905. Published through the courtesy of the *Journal of the American Medical Association*.

for the moment it is enough to know and to recognize that senile atrophy is pathologic and that, essentially, old age is disease. It is unnecessary to discuss the plausible but startling suggestion,—that of finding some antiserum which might antagonize the development of the age-producing agencies. Already we possess some knowledge of how to defer age, but this information is not generally insisted on as a guide in living. We frequently allude to measures of prevention, but we do not reduce them to a system which can be taught to the student and to society. If we are further to lengthen the probational study period in medicine, it will be wise to give the matter of deferred old age very careful consideration. If the subject were studied seriously, we would foresee a tremendous improvement in the type of humanity, and the readjustment of many habits, customs, social questions along altogether new lines.

Obviously, real progress cannot be made without accumulating data from which to deduce positive conclusions. At present we lack information on such simple matter as the effect on the organism of diet, exercise, recreation and rest. There are many opinions, but they are largely theoretical. To begin with, we must know something about the material with which we have to deal; that is, the inheritance, the reserve powers, the internal resistance of the individual. In fact, we know very little concerning the inheritance of any one. All are more or less obscure in the matter of family history. There are courts of records in which are found descriptions of estates, but there are no archives in which are deposited accurate descriptions of the various members of the family itself. We are more particular in relation to our domestic animals, especially in the introduction of a new strain. Inquiries are made as to the matter of endurance, longevity, powers of nutrition, good or bad qualities of mind or body, but concerning ourselves, there is an indifference to these important qualities of organic perfection. It would not seem to be altogether impossible to acquire some official record of the physical and intellectual qualities, in other words, strains in men. It is not improbable that if such records were known to exist, they would be not only consulted, but would gradually grow to have an influence on the formation of families. Love is said to know no barriers, but history fails to confirm this view. If a matter of class, of caste, or rank has been sufficiently important to control the forming of marriage contracts it is not impossible to conceive of a more intelligent public sentiment which would make an alliance with a family celebrated for physical, intellectual, and moral superiority, a thing greatly to be desired; and conversely, which would lead to the abhorrence of an alliance with a family in which freaks, degenerates and incompetents, or in which a tendency towards lowered nutrition, too early maturity, or premature senility were frequent events.

Naturally, this is not an affair of a generation, but it is unquestionably a doctrine which ought to be taught. The notion that acquired characteristics can have any transmitted influence on the character of the offspring, as formerly taught by the Lamarckians, is still doing great harm. Our young people should be instructed in the fact that the well being of their posterity depends almost altogether on the native stamina of the germ-plasm with which they are endowed. They should be taught to understand the responsibility implied in maternity and paternity, and should be made to recognize that the greatest influence which they can have on the well-being of their children is in the selection of the spouse. The sentiment should be encouraged that parentage is a matter which concerns the public, and especially posterity, more than it does the parent; that the germ-plasm of the race is of all questions the most important which concerns it. Measures could be adopted which would make it more possible than at present for individuals to inform themselves concerning the family characteristics of the contemplated *fiancée*. A bureau for the precise registration of disease and causes of death, together with the chief facts in family and personal history, might be established through legal enactments, reinforced and made active by a high social sentiment. Such a bureau would afford the needed information, and the special study of the material thus provided would result in the formation of guiding principles in human biology and race development.

Such a system might seem to be contrary to our laws of personal rights, and, of course, the sanctity of reserve may not be easily disrupted. Nevertheless, with Emerson, "We shall one day see that the most private is the most public energy; that quality atones for quantity," and although we cannot attain at a bound to these heights of wisdom, we may, at least, begin to map out a way. He is short-sighted who supposes that the complacency shown in the devolution of the race must continue, unchanged, eternally. We have only admiring applause for the remarkable accomplishment of Burbank in the vegetable world, and yet such are our deep-rooted prejudices that we shrink from the application of similar principles to human uplifting even when we know it is possible. Shaler remarks that man "sorely needs a herdsman's care." The subject is painful, yet I think it will be acknowledged that susceptibility toward tuberculosis, insanity, alcoholism, epilepsy, *et cetera*, is hereditary. Granting this, it follows that a stock could be developed which practically would be immune to those diseases. Doubtless all will regard the realization of this suggestion to be remote, and some may liken it to that of Maeterlinck who says: "Man may sometime master the secret of gravitation and by means of it steer his planet wherever in the universe he wills." The principle is open to such wide application that it may easily be obscured in absurdity. Nevertheless, here is an honest, straight-forward truth not so far beyond our reach. It lies in a public demand that none but healthy parents shall be allowed to bear children. The brevity of middle age resides,

first, in the inherited quality of the organized tissue; second, in the effects of its environal conditions on each organism. We physicians are making it our function to exterminate disease. Why should we be content with merely pointing out that certain disease tendencies are hereditary without taking some practical steps to prevent such disease transmission? As an illustration, it doubtless would be a hardship to the syphilitic to make procreation for him a penal offense. Nevertheless, such a course would be full of beneficence to the race. The amount of nervous and other disease in the innocent resulting from syphilis in progenitors is incalculable. The incompetence and misery which often overtake the unfortunate victim in middle life as the result of syphilis, one or two generations removed, must be considered. Those who have studied the subject carefully, regard this disease as responsible for one fifth of all cases of arteriosclerosis, and of yet a higher proportion in those cases occurring in middle life. A man has not the moral right to beget disease. Notwithstanding that it usually comes through ignorance, it should not be allowed. The profession of medicine should make its convictions bear fruit, and should teach and should be expected to teach that the marriage of a large number of people whose nuptials they now help to celebrate should either be prohibited or else made barren. To those who would regard the realization of these thoughts as unattainable, it may be remarked that the world is yet very young, and as a result, as Carlyle has said, in most things very stupid. At any rate it will be admitted that middle age could be considerably prolonged and the infirmities of old age largely mitigated if we could eliminate from the equation that faulty cell metabolism which arrives through inheritance.

The trend of modern thought is toward the development of the individual. Our researches in therapeutics, dietetics, immunity, gymnastics, —all alike are directed toward the betterment of the individual by making life possible to many who would otherwise perish, comfortable to many who would otherwise survive in misery,— results in prolonging life. Our educational efforts concern themselves more and more with fitting for life the otherwise unfit, in so dealing with the neurotic, the semi-imbecile, the vicious and criminal that they may be practicable units in the body politic. The result is that individuals otherwise impossible are so modified that they are finding some happiness in life and become less disturbing elements in society as a whole. There can be no doubt as to the benefit to the individual, and no doubt as to the good which comes from the reflex effect on society. Perhaps nothing counts more for the moral up-lifting of the masses than the awakening of personal interest in all altruistic undertakings, but let me repeat, we must dismiss as untenable the views of the Neo-Lamarckians that acquired characteristics of the individual have any appreciable effect on the offspring. It is acknowledged that the natural tendency of defectives of all kinds is toward extermination. Left to themselves, many of these weak strains would disappear. In making it possible for these strains to continue to blend and to dilute the organic type of the race, we are unquestionably lowering the future standard of internal resistance and we are creating a threat to physical, intellectual, and moral perfection.

On this subject Prof. Woods Hutchinson of this city has said some interesting things.

Is it unchristian or unethical to consider this question from the phylogenic standpoint, or, on the contrary, is it not from the highest ethical plane that we look forward to a means that may elevate man spiritually, strengthen him intellectually, increase his vital and physical vigor, thus widening the period of his usefulness and decreasing his sufferings as a whole? We find ourselves sustained in our efforts when they are directed toward helping the individual, but there seems to be a social veto placed on the study of generic betterment. Weismann and his followers have shown us that the character of the individual depends on the germ plasm with which he starts life, and although education and favorable environments may modify greatly the individual, they have no effect whatever in improving the character of his posterity. The possibilities of an individual, his resistance to disease, his longevity, his strength and his intelligence are determined beforehand by his inheritance. It is known that it is possible to bring deterioration by introducing an inferior strain. No educational advancement can counteract the injurious effects of this preservation and in breeding of the bad stock. Unless intelligent foresight be used to prevent this definite and ascertained source of degeneracy, we are likely to find a growing depreciation of our racial stock and, in spite of our modern preventive medicine, a progressive increase of mental and physical disease, and an abbreviation of the working years. By homely methods we have learned that aside from the question of perfect nutrition and proper exercise of function, there is nothing which contributes so unquestionably toward the improvement of organic life as intelligent study of what is known as breeding, in other words, by the intelligent blending of the germplasm of healthy, resisting, long-lived stock so that there may result not inferior progeny, but offspring superior to the parental stock. I am aware that the question is not new, and that its mere mention exposes one to criticism, not only from the timid and ignorant, but even from the wise and philanthropic; and yet, no one can deny that in shutting our eyes to this truth which Nature spreads plainly before us and which she makes the subject of countless lessons illustrated by individual inferiority, perversity, disease and death, we are not doing all that we ought for the coming race, not all that we might toward assisting that evolution which we hope for, but which lingers so in the process. It will be said that no one can contemplate such a scheme as is here suggested without feeling strongly convinced of its impracticability. Of course, it must be admitted that the large fulfillment of such ideals is at present quite impracticable, but it is not

impracticable to study the subject with the hope of finding certain aspects which may admit of modification.

By a study of the subject we would at least offer a reasonable antidote to the possible injurious effects of the modern rage for individualism. More than this, it may be possible, by more or less united action, so to modify established customs, social tendencies and common law that we may elevate the sense of family, and possibly municipal and national morality to a standard high enough to result in our placing the welfare of the community above the desires and the instinct of the individual. As we have somewhat meddlesomely diverted the natural tendency of deterioration and degeneration from its end, thus interfering with the action of the law of the survival of the fittest, it does not seem improper that individualism should recompense society by yielding some of its prerogatives for the welfare of the race; or, to put it more pointedly, it would seem only fair, since we have preserved the life of the weakling, that we should deny him the privilege of paternity, or since we have educated the defective or criminal youth into semi-useful citizenship that we should forbid him the right of increasing the number of his kind. In one of our states a legislative enactment looking toward this end was recently vetoed by the governor who accompanied his decision by a conventional lecture to the profession of medicine on its willingness to disregard the rights of individuals. This illustrates one of the difficulties in the way and would seem to indicate still another field in which physicians must assume their rôle of public educators. The sentiment of the people is instinctively against public interference with personal privilege. This feeling seems to be particularly strong in the Anglo-Saxon people, and to be contrary to the nature of our institutions; yet, like every other privilege it is susceptible of doing great evil if carried to its full logical extreme.

Are we not as an organic type suffering from an extreme application of individual rights? Are we not inflicting an injury on the race through permitting unwholesome privileges to the individual? Is it necessarily dangerous to attempt to create a public sentiment, a social feeling toward the making of new customs and the enactment of new laws which may result in the elimination of at least some of the more abhorrent and destructive elements that at present are blending with and antagonizing the evolution of the race? Would it not be desirable to have an aristocracy of health? That is to say, to see developed a zeal for physical and intellectual perfection, and to have that zeal supported by public sentiment, so that there might be created something like a caste, the attributes of which should be mental and physical wholesomeness, and from which should be excluded those families which are shown by carefully studied data to come of degenerate or unfit stock? This would result in a contest between the general and the particular. At present the particular, the individual, prevails; in the presence of rightly adapted social feeling the general would prevail. Evolution would thereby be speeded and not retarded as at present. The principle involved does not seem to be any more unethical than the application of the quarantine laws which now operate injuriously to the individual, but make greatly for the public good.

Let us now consider what may be accomplished in the way of postponing age by the reasonable treatment of even the poor material that comes to us. Undoubtedly the question is as broad as the whole subject of personal hygiene and general therapeutics, and so, for the most part, must be passed; there are, however, some aspects of the subject which deserve special consideration. One of these is the improvement in the nutrition of the aged as the result of good teeth. While all recognize the comfort and convenience which we owe to the dentists, it is doubtful if we fully appreciate how much they have contributed to good health and longevity. For another great advance we have to thank the oculists. Who can estimate the additional resources both of usefulness and happiness secured through the discovery of spectacles and the operation for cataract? Useful eyesight contributes much toward health and long life for the reason that it permits of a continued interest in living which otherwise would be lost. It permits of a struggle for an ideal, and in this real happiness consists. The ideal, of course, is never reached, but, as Montaigne says, the reward is not found in the victory, but in the conflict. Perhaps no one factor is so important in maintaining courage and health in old people as the creation and continuance of some keen interest in life, and this interest, even in the otherwise enfeebled, may be kept up by means of useful eyes. Now comes the time-worn but neglected subject of arterial disease.

Too often our attention is for the first time attracted to arteriosclerosis by the appearance of fibroid or fatty degeneration, exhibiting itself in the figure, form and viscera of the individual. Even after these later changes appear measures may be adopted to stay the march of the process, but how much better it would be to anticipate it. For instance, by noting the high and rising blood pressure and the physical signs of cardiac strain, by estimating the decline in urinary solids and the rise in the urotoxic unit, by measuring the decline in respiratory capacity, or by detecting the falling off in cutaneous secretion and the loss of the pliability and softness of the skin, we may make ourselves aware that vascular degeneration is progressing. Heedless of these earlier manifestations we shall soon awake to the advent of the state which Sir James Paget has so marvelously described.

In the earlier steps of arteriosclerosis, if intelligent study be given to the individual, to his habits of life, to his excesses and to his deficiencies, very much can be done, and, by thoughtful men, is done, to delay arterial changes and to restore functional activity.

May I trespass so far as to emphasize the importance of judging and correcting the disturbed

balance between assimilation and waste — the anabolic and katabolic processes? The facts are so well understood that one hesitates to mention them, and yet just here there is so much neglect of precious opportunity. There are successful methods of lessening the extent of auto-intoxication and of widening the field for the play of nutritional processes. This is so commonplace that we neglect it. Middle age often brings luxury and at the same period the contracting arteries narrow the field of physiologic activities. The circumstances of life and the taste of the man are for indulgence in appetite or for excess in undertakings, while the limitations of the organism are increased. The tendencies are thus in opposite directions, and, with Münsterberg we ask, "How can they keep together who are going different ways?" Ultimately, they must separate, of course, but temporarily they may keep company if we help to preserve harmony between them. There is abundant proof that even advanced arteriosclerosis may be so far modified as to delay the oncoming degeneration and to admit of happy usefulness, but the victim must be content with moderation and not hope, like Mahomet, to cleave the moon in twain.

Advanced arteriosclerosis is too generally neglected, and intoxications of one kind or another are for the most part responsible for it. Our prophylactic and curative measures are readily understood. It is well known that the relatively great fatality of pneumonia and other acute diseases is explained by the greater toxemia which exists late in life. Besides this, the auto-intoxication increases the blood pressure and induces prematurely the fatal events of cerebral, cardiac and renal diseases. Almost as deplorable as these are the conditions of unnatural excitement, confusion, and depression from which many people unnecessarily suffer in early old age. Still further there may be found in vascular disease the source of much severe pain from which old people suffer. This pain is often referable to the aorta, at times to those forms of aortitis which Clifford Allbutt has described, and also to aortitis and peri-aortitis of the abdomen, recently so well set forth by Teissier of Lyons. The latter has also shown that the pain can be ameliorated, the progress of the disease stayed and even great improvement induced by rational treatment. Aortitis and peri-aortitis often greatly interfere with the flow of blood into the branches of the abdominal aorta, and as a result the organs supplied by these branches suffer special degeneration. In middle age and later life, intractable diseases of the stomach, intestine, kidneys, and other organs could be dealt with much more successfully, and comfortable longevity secured, if more attention were devoted to this pathology.

There remains for brief consideration the question of what can be done to make old age more tolerable; in other words, to remove it to a physiologic basis. We find, on close consideration, that most of the derangements from which the aged suffer can be classified as belonging distinctly to pathology, but I am afraid there exists a tendency among us to dismiss these matters as necessary corollaries of senility, without giving them that careful consideration which similar processes receive in younger patients. To a few the diseases of old age have a peculiar charm, and these few who give senile diseases special study seem to agree that the complaints of the aged arise for the most part from toxic causes. Even the threadbare question of arteriosclerosis falls to a large extent under this head. There is good reason for believing that this toxic state which underlies the decadence of senility takes its origin for the most part in the colon. Metchnikoff supports the view that mammals have developed a large colon for the purpose of storing the products of digestion, and that man has inherited an enormous colon at the expense of his longevity. This organ harbors an immense number of bacteria leading to fermentations, putrefactions, and the production of alkaloids, fatty acids and toxins which man has to combat for the length of his mortal days. While vitality is young and vigorous, the combat is not so unequal, but with failing powers auto-intoxication prevails in the contest between the internal resisting powers of the organism and the toxic adversary made potent by inheritance. Unfortunately, the degeneration of age first produces functional insufficiency of the organs of elimination, then their degeneration, and as a result we find the skin, kidneys, lungs, liver, incompetent in each individual overtaken by years. It is somewhat remarkable that facts so well understood as these do not receive more attention.

There are few textbooks, there is little teaching devoted to the pathology and right management of senile disease, and yet experience teaches that few patients respond more satisfactorily than do the aged if their cases are approached with the principles in mind which are here set forth. It is not merely a question of dilatation of the colon, nor of any special defect of the organ; even in the absence of these, the source of auto-intoxication exists and becomes important because of the failure of the skin and other emunctories which, earlier in life, are relatively sufficient. The indications are obvious. In addition to the usual measures for improving the general circulation, old people are benefited by systematic colonic lavage, stimulating baths with superficial massage prescribed pulmonary gymnastics and an abundant drinking of pure water. It is the almost universal neglect of these matters which has made it seem to me a subject of sufficient importance to call to your attention in a general address. There is something inspiring about youth which gives an incentive to our care of the diseases of childhood and adolescence, but there is something benignant in studying the problems that lead to the postponement of age and to the alleviation of the trials of senility. Old age is repulsive when it is pathologic, but is beautiful when it is physiologic, and it would appear as a fitting theme for the consideration of this great body at its meeting in this new land of the setting sun.

Original Articles.

NEURASTHENIA. A STUDY OF ETIOLOGY. TREATMENT BY OCCUPATION.

BY HERBERT J. HALL, M.D., MARBLEHEAD, MASS.

Although the term neurasthenia seems about to lose its identity in a better and more accurately descriptive nomenclature, still it is a very convenient expression, and one which will be readily understood to refer broadly to a wide range of functional mental and nervous deviations. No doubt, the term is frequently used improperly and may often cloak a deal of ignorance; nevertheless, there are fairly constant "neurasthenic" features which can be recognized as accompanying most of the neuroses or psychoses. And as these conditions are modified by the mental state of the patient and are in many instances dependent upon it, we may conceive of them as linked together by the common bond of neurasthenia. In other words, the individual patient may present peculiar symptoms which deserve recognition and name, while at the same time the underlying groundwork of the case is a mental irritability and instability, which has long been recognized under the name of neurasthenia. So speaking generally it would seem that the term neurasthenia is justified; it will, at any rate, be freely used in this paper.

The confirmed neurasthenic with his tangle of mental and nervous symptoms presents a truly appalling problem to the conscientious physician. Even the relatively simple cases of neurasthenia often require in their treatment more time, strength and patience than would be needed in the successful management of the most difficult cases of surgery or internal medicine. And the baffling part of it is that sometimes the problem does not seem to be a scientific one at all, but one as likely to be solved by chance as by painstaking care. We do recognize neurasthenia as a disease, but its border lines are very indistinctly marked and of its beginning and it send little is known. Neurasthenia is a condition which, at present, not only defies accurate description, but of which the treatment is very largely symptomatic.

In a recent paper,[1] the writer has described an attempt to treat some of the conditions which may be classed under the head of neurasthenia, by the method of seriously interesting the patient in certain of the handicrafts, thereby substituting for the unfortunate conditions which surround and help to make up the disease, a saner, more wholesome life. This work was attempted because of a conviction that neurasthenia might be in some large part directly due to faulty living, and that such substitution would go far toward eradicating the disease. The methods employed and some of the difficulties involved were described. The present paper, which on some accounts should have appeared first, will further advocate industrial treatment and will suggest a simple conception of neurasthenia, a conception which, though manifestly imperfect and incomplete, may serve as a useful guide in treatment.

[1] The Systematic Use of Work as a Remedy in Neurasthenia and Allied Conditions. Boston Medical and Surgical Journal, Vol. cliii, No. 2, pp. 29–31.

THE NEURASTHENIC UNIT.

It is not improbable that some of the confusion which clouds our understanding of neurasthenia and its treatment may arise from the fact that we are wont to look at the disease as a whole and in its more fully developed aspects. Such a view of any complicated body is bound to be misleading. Neurasthenia may, as has been affirmed, be due to the toxins of over functioning, but there is an explanation which, though it may be only partial, is so much more natural and so much more helpful in its application that it must not be overlooked.

Usually the patient dates his illness from the time he "broke down" or became wholly or partially incapacitated for work. It is probable, however, that there is always a long preparatory stage, covering, it may be, many years.

Critical observation of relatively normal children or adults will show, in a pretty large proportion of humanity, a more or less faulty relation between the individual and the ordinary affairs of life. There is clash of will against will, there is jar of impulse and desire against the limitations of necessity. And as a reasonable result of this clash, we may have a certain amount of mental irritation and irritability. In this simple process which may be observed any day in any home, the writer believes may be discerned the possible beginning and source of neurasthenia. The minimum amount of inharmony which in a given individual can produce an appreciable degree of mental irritation may be looked upon as a sort of neurasthenic unit for that particular person, because it happens in life that, as a result of continued mental irritation, we may have the well-known sense of fatigue and exhaustion, clearly psychic, and not to be distinguished from the characteristic weariness of neurasthenia. It is, moreover, true that in fully developed neurasthenia the exhaustion and its associated subjective symptoms may be markedly increased by disappointment or any annoying circumstance. Thus we may trace a fairly clear connection between some of the more complicated manifestations of neurasthenia and the simple irritations of ordinary life.

Fortunately, owing perhaps to natural resistance of the individual, the process aborts early and we have no later developments. Very soon, however, in many cases, the unit and its early products are joined by a host of physical and psychic symptoms which in themselves constitute new bases for mental irritation and its untoward results. Life becomes complicated and difficult, and as new sources of irritation are added, mental processes become muddled and ineffective and the patient is on his way to the full realization of neurasthenia, with its disabling weight of symptoms, physical and mental, and its terrible force of association and habit.

An examination of the daily life of the average neurasthenic will reveal, in most cases, the grossest maladjustments. The patient's whole personality is at war with its environment. It is evident that here at once is a condition which, if not relieved, can perpetuate indefinitely, some, at least, of the most important neurasthenic symptoms. We may be dealing with elaborate toxins of over and perverse functioning, with physical disease and suffering, with personal predisposition and with heredity, but we are also dealing with matters of everyday living, and we are deeply concerned with two things, — the attitude of the patient toward his environment and also with that environment.

TREATMENT BY OCCUPATION.

Much may be done toward correcting the patient's attitude toward his environment, whatever it may be, and in this direction lies the field of mental therapeutics, and of any treatment which may, by improving the general health, improve also the outlook of the patient. This side of the subject should never be neglected, for it is capable of excellent results. But in the face of surroundings which tend to foster and propagate the neurasthenic unit, progress is bound to be slow and unsatisfactory. It is a fact that the environment of the neurasthenic is almost invariably bad. He has helped to make it so himself, and his family, in most cases, has done the rest. Change of outward conditions has always been a strong ally of the physician who treats neurasthenia, because it gives an opportunity for new adjustment of the individual with life. But that carelessly advised change is capable of harm will be readily admitted.

In the relatively light cases, particularly those associated with evident overwork, the time-honored vacation, a period of rest and recreation, suggests itself and is fortunately often sufficient to turn the tide toward health. But in cases of any magnitude the vacation or even prolonged and well-conducted physical rest may prove to be woefully inadequate. The "rest cure" in competent hands is doubtless capable of great good, but it is a measure which must be used with caution and in many cases only as a temporary measure. It would seem that we are not particular and discriminating enough about what the change shall, be and that much time and opportunity may be lost because we do not recognize the importance of regulating carefully the new life which the patient must lead.

Since it would appear that improvement in the neurasthenic may be in part at least dependent upon our being able to secure for him an improved environment, we must make a serious search for a life which shall be, in as many respects as possible, ideal for our purposes. We need not be deterred in our quest by the reflection that many neurasthenics are too ill physically and mentally to change their lives in any way. It has been shown that unless there is great physical or mental degeneration, such patients can, with advantage, be carried through very radical changes in living. If we can eliminate the necessity for prolonged physical rest, and this can very often be done, it becomes evident that the ideal life for the neurasthenic should be one of occupation. For the unoccuped hand and mind must always court confusion and degeneration. But occupation without tangible results is not only vain, it is actually depressing. It is not necessary to invent occupations for therapeutic use for it will be found that certain old and established crafts lend themselves very aptly. The crafts of pottery and weaving now have for some time been used by the writer in this connection, for reasons which will appear.

The craftsman who is pushed by competition and the hard conditions of trade may himself be on the road to neurasthenia. But the type of craftsman who worked a century or two ago, without haste, with his own good tools, for a beautiful and well-conceived purpose, — such a man might well be happy. And indeed the picture which comes down to us from the dim workshops of the past is one of quiet contentment and a fine joy in living and creating. The worker in metals stood all day at his anvil and wielded his heavy hammer. He was not tired. The ring of the anvil was the best of music, and the satisfaction of being able to weld the tough metal into beautiful and useful shapes created a fine central interest in life, around which all smaller affairs grouped themselves in just order.

The life of the artisan recommends itself because in essence it is simple; it does not invite the complications of social or business or professional life, but it may be so complete and satisfying as to compel devotion. The neuresthenic who can drop the conditions of his old life to become a successful weaver or potter thereby simplifies life immeasurably. In pottery, for instance, the simple and primitive processes are soon within his grasp. He can handle the clay. There are no insurmountable difficulties, and in that mastery is seen the type of future progress along these lines of industrial therapeutics. The patient having dropped the impossible task of living successfully his old life, whatever it may have been, presently finds himself master of something, at least, and the discovery is an important one, for it restores confidence and, in a small way, substitutes success for failure. In the scheme of treatment it is proposed that the patient shall become by degrees expert in his chosen craft. In some instances it may be found that the remedy will become an absorbing life work. Surely no harm is done if a broken-down minister or teacher becomes a successful potter. In other instances it may prove that the craft will become a stepping-stone to some other much desired end, which, but for this simplification of life, would have been impossible.

That there are serious complications involved in the transfer of the neurasthenic from an involved and self-centered life to such a fine, wholesome atmosphere as the life of the artisan implies, no one knows better than one who has tried the experiment.

But that such a practical satisfying life is better in many instances than mere change of scene, better even than rest or recreation, can scarcely be doubted. At first thought it seems impossible that the weary neurasthenic can ever become an enthusiastic worker in clay. But that such a change can be brought about has already been proved. One does not need to be a physician to appreciate that the results of such a change of life, if it can be brought about, are likely to be far-reaching and good in every way. Many difficulties, mental and physical, clear up in the new atmosphere without further treatment and the task of the physician is greatly simplified.

A little practical experience in what may be called the industrial treatment of neurasthenia has taught some important lessons.

It is desirable to be well prepared with all the accessories of the new life which you recommend.

There must be a good shop, running well and turning out an ideal product. The shop well located and well managed cannot fail to be a strong asset, for it gives at once a suggestion of success and permanence. This requires good teachers, who are also agreeable and tactful. The field is so new that people competent to teach such things as pottery and weaving, for instance, are very hard to find. The shop at Marblehead is exceedingly fortunate in having at its head a young woman who, besides being a good teacher, possesses an unusual knowledge of applied art in several branches.

Already a small beginning has been made in the way of a training school, where one may learn in time to become a teacher of arts and crafts for therapeutic ends. There is no reason why the shop, besides being a school, should not also be commercially practical. In this connection, the writer's attention has been recently called to an article[2] written some years ago by Dr. G. A. Blumer, now at the head of the Butler Hospital in Providence. In this article, which will well repay reading, Dr. Blumer informs us that for many years treatment by occupation has been most successfully employed in the insane hospitals of New York State. The shops there operated were well paying institutions, supplying the state system of asylums with such necessities as upholstery, clothing, door-mats, buttons, combs, etc. Dr. Blumer feels that in his department practical occupation has been constantly palliative and in some instances curative.

One who undertakes the industrial treatment of neurasthenia must be prepared for reactions. They will probably always occur and will sometimes demand recourse to bed treatment and physical rest. It will evidently not do to push the average patient too hard, particularly at first, for fear of misunderstanding and revolt.

The patient should understand that he is being introduced to the "Simple Life," because that life offers the least food for the nourishment of neurasthenia.

If this method of treatment does not include such excellent agents as elaborate hydrotherapy, it must, in compensation, pay especial attention to matters of practical hygiene. Patients should be taught how to breath and walk properly, how to bathe, and what to eat and wear.

In short, we must offer good substitutes for whatever we deny the patients from his old life.

To summarize: Neurasthenia is a very indefinite term which may be made to apply to a wide range of functional and mental states, which, however, seem to have, in common, mental instability, irritability and fatigue. It is a condition always complex, but which may be simplified for therapeutic purposes by the recognition of a neurasthenic unit of which, in combination with an infinite variety of conditions and happenings, social, educational, physical and psychic, the disease may be said to be built. While much of the diseased state depends upon individuality and much doubtless on purely physical conditions, very much also depends upon environment. Treatment of symptoms is frequently unsatisfactory, and the broad principle of substitution is advocated, for sinc the neurasthenic unit is the product of maladjustment with existing conditions, it is probable that entirely new conditions will offer opportunity for better adjustment.

The kind of life chosen as most frequently applicable and least likely to foster neurasthenia is that of productive industry. The difficulty of transferring the patient to this, for him, ideal environment are not so great as might at first be supposed.

It is desirable to control a practical shop where fabrics and articles of interest and beauty may be made under competent instruction. It must be the real thing and not a mere play shop. Properly managed and in suitable cases, the patient forgets his mental difficulties in the light of large new interests. New and improved habits are formed and, in uncomplicated cases, no further treatment is necessary, providing it is possible to enforce good rules of living and of personal hygiene. In time, the patient, if too much physical or mental degeneration has not taken place, will right himself and a rational life of some sort will be possible.

Owing to the recent adoption of this plan, it is not yet possible to predict just what its results will be or in what classes of cases it will be most useful or at what stage of the disease. Something over a year of active operation has, however, in no way been disappointing. The few cases treated have already justified the experiment. The writer has noted with pleasure a decided awakening of interest in the plan of treatment, and it is believed that, before long, very definite and conclusive results will be forthcoming.

[2] The Medical and Material Aspects of Industrial Employment for the Insane. *The American Journal of Insanity*, Vol. liv, No. 2, 1897.

SENILE ALBUMINURIA.*

BY A. E. AUSTIN, M.D., BOSTON.

The presence of serum albumin in the urine of purely functional origin undoubtedly occurs due to circulatory disturbances, as the so-called

* From the Medical Chemistry Laboratory of Tufts College.

orthostatic forms of the French, the temporary presence in athletes, as in those who engage in the Marathon runs, or it may often be attributed to a limited assimilation of that article taken as food[1] analogous to the similar limit of sugar oxidation and conversion into glycogen, beyond which the excess is eliminated by the kidney. However, we should not be readily satisfied with this explanation of its presence without the most careful scrutiny of the urine, to determine, if possible, whether any structural changes of the kidney or bladder may not be present to account for this abnormal product. Of course, foreign albumins, like egg albumins, or its modified product, albuminose, are rapidly eliminated, if present in the blood in more than very limited quantities, yet it has been possible lately to inject both into an animal in small but repeated amounts without the urine containing either.[2]

Recently Professor Osler[3] has described a so-called senile albuminuria in which casts were sparingly present, and in which he attributed the presence of this substance to "presenile changes in the kidney, the result of arterial degeneration causing a circulatory disturbance in the kidney." Of course, when dealing with the urine of the aged, we must pay especial attention to the character of the albumin, for, on account of the prevailing prostatic enlargement and consequent irritation, both nucleo-albumin and mucin are present in the majority of those urines examined. The former, on account of its solubility in strong acids, cannot be mistaken for serum albumin with cold nitric acid, but the latter often leaves one in doubt, for it forms a perfectly clearly defined zone, which takes a position, however, in the urine some distance from the acid. In fact, it is often possible, if serum albumin is also present, to see two distinct zones, one in the urine and one at the junction of the urine and the acid, alike in all respects except in position. In fact, as good an observer as K. A. H. Mörner[4] insists that serum albumin, if present only in the merest trace, may give this second or upper ring, and that its presence is due to a union of the albumin with albumin-precipitating substances in the urine of which the compound is soluble in strong nitric acid to the obliteration of the ring at its usual position, and only when the albumin exceeds the amount which can combine with these "precipitating substances" chodröitin sulphuric acid do we obtain the ring at its usual position. Oswald, on the other hand, regards this second ring as due to a globulin.

Be this as it may, in the following examinations, whenever the so-called upper ring was found, it was always considered to be mucin, and referred to as such. The presence of serum albumin (and globulin) was always verified by cooking with acid phosphate of sodium, which is much superior to acetic acid for the purpose of acidifying, in that an excess cannot convert to acid albumin and thereby prevent coagulation. Quantitative determinations of albumin were made with Esbach's solution and the electric centrefuge. My interest having been aroused in this subject by Professor Osler's paper, previously quoted, the opportunity was offered me by Dr. F. M. Briggs of examining the urines of 45 men, the oldest of whom was ninety-five years and the youngest sixty-four, the greater number being over seventy years of age. With reference to the findings, we may divide them into three classes: First, those in which mucin (upper ring) alone was present to the number of 16. When we come to consider the cause, or, perhaps better expressed, the associated conditions, we find that prostatic and seminal vesicle cells, amyloid bodies, few pus and blood corpuscles, and usually spermatozoa were present in 9 cases; urates and mucous (spurious) casts in one, sugar to the extent of 1.1% in one, pelvic and renal cells, pus in clumps and numerous broad hyaline casts in one, while in four nothing could be discovered which would lead to an explanation of the presence of mucin. From this we may say that prostatitis accounts for the mucin in over half of the urines investigated. The second class, comprising nine in number, showed only serum albumin (and globulin) with the typical ring, varying in amount from a mere trace to ¼% in one case, and ½% in another. Associated with this in four instances were discrete pus corpuscles, fairly numerous, much blood, and many bladder and prostatic cells but no casts. Twice there were found pus in clumps, round and tailed pelvic cells and some blood, but no casts; while three times the findings were pelvic cells, pus and blood, with broad hyaline and granular casts with fat and renal cells adherent. Here one can distinguish three conditions, — one of prostatic catarrh, one of mild pyelitis, and one of pyelonephritis, the last associated with the large amounts of albumin. In one of the last group there was sugar present to the extent of $\frac{1}{10}$%. The only explanation of the fact that in the same pathological conditions we may have mucin or serum albumin is, in the latter, the greater predominance of blood and pus.

The third group, which contained both serum albumin and mucin, typical and upper ring, amounting to ten, can be subdivided according to the associated conditions, into six which had prostatic and bladder cells, pus, blood, tailed cells, broad hyaline and granular casts, many of the latter with fat adherent; two which had merely cells from the prostate and seminal vesicles, pus, blood and spermatozoa; one which had the same in conjunction with many narrow hyaline casts and numerous withered renal epithelial cells; and one having the same characteristics with reference to the débris from the prostate, but having a large amount of bile present. We recognize here the characteristics of

[1] Inouye: Ueber alimentäre Albuminurie. Arch., f. klin. Med. 75, 35, 378, 1903.

[2] Tralldenier: Tierversuche über subcutane Ernährung mit eiweisshaltigen Nährlösungen. Berlin. klin. Wochenschr., No. 40, 1903.

[3] On the Advantage of a Trace of Albumin and a Few Tube Casts in the Urine of Certain Men above Fifty Years of Age. N. Y. Med. Journ., Nov. 23, 1901.

[4] Bemerkungen zu dem Aufsatze Oswald's "Untersuchungen über das Harneiweiss." Beiträge zur chem. Physiolog. und Patholog. V, 524.

prostatorrhea with a mild pyelonephritis, the former condition alone and the same process associated respectively with early interstitial changes in the kidney, and bilimbinuria.

Out of 45 old men, then, we have the urines of 19 containing true albumin in from traces to considerable quantities. Yet these men were not ill and suffered only from the infirmities which old age brings, perhaps obliged to micturate rather oftener than normally, and continually constipated. How, then, shall we account for the slight disturbance caused by these conditions, which, in a younger person, would appear much more serious from a prognostic point of view. First, as to the elimination of urea, which, while in itself retained, does not cause disturbances, is associated with other excretive materials which do, — of the nineteen which contained true albumin, one had less than 1% of urea, viz., .89%; four had 1.1%; four had 1.2%; four had 1.3%, and four had over 1.5%. As the urines for the day were always a litre or less, there is sufficient evidence that the kidney's functional activity was very much impaired, while some of this reduction in the daily out-put of urea may be due to the diet, largely vegetables and bread, as well as the limited activity of these aged men. This diminished excretion of urea was also found by Kouese [5] and attributed by him to a reduction in the decomposition of nitrogenous substances in old age, which is the result of diminished intracellular metabolism. This, then, is not a functional albuminuria, by which we understand one without perceptible cause for the same in the genito-urinary tract, but we apparently have ample cause for its presence; whether the elimination of albumin by kidney alone may produce eventually a mild pyelitis or pyelonephritis is not known; presumably not, for we know that glucose may be discharged through the kidneys for years without producing a nephritis, so that we may well regard the condition of the kidney as the cause of the albumin. Another thought came to me, that possibly owing to the continued constipation the absorption and elimination of indol by the kidney might be the cause of its condition, and some of the most suggestive urines were examined repeatedly for quantitative indican. This was done by the method of Strauss, which, given briefly, is as follows: Precipitate 20 cc. of urine with 5 cc. 20% lead acetate solution, then place 10 cc. of the filtrate in a separating funnel, add 10 cc. Obermeyer's solution and 5 cc. chloroform and shake, and after three minutes allow the chloroform to run into a graduated cylinder and repeat the process as long as any more color can be extracted; then from the collected extracts are to be taken 2 cc. which is to be diluted with chloroform until the intensity of color corresponds to a solution of 1 mgm. indigotin in a liter of chloroform in a similar cylinder of equal amount to the former. This method has been found by A. Ellinger [6] to be quite equal to the titrating method with permanganate of potash. For instance, in a liter of different urines by the former method, respectively, 10–15, 10–15, 30, 5 mgm., and by the latter 14, 11, 32, under 5 mgm., so that we may be satisfied that we have very nearly accurate results. These estimations were made by my assistant, W. Dacre Walker, to whom I wish here to express my thanks for the same. In order to abbreviate as much as possible, the results follow in the form of a table, giving the daily amounts, with date of examination.

INDICAN DETERMINATIONS.

Name.	Date.	Amt.	Indican (mgms. per 1000).	Amt. mgs per day.
J. R. G.	March 4	950	Slightest trace	
	March 12	820	1.87	1.53
	March 24	850	.75	.64
	March 28	880	Slightest trace	
	April 5	660	2.8	1.85
T. S. W.	March 3	810	5.82	4.71
	March 12	830	9.10	8.55
	March 19	910	10.7	9.7
	March 24	1,100	2.25	2.48
	April 5	920	6.2	5.7
H. O. P.	March 3	750	27.2	20.4
	March 12	900	23.1	20.8
	March 28	910	20.0	18.2
	April 5	740	43.4	32.0
J. W. D.	March 3	670	7.9	5.3
	March 12	655	4.4	2.9
	March 19	550	7.25	4.0
	March 28	500	3.9	2.0
	April 5	680	7.2	4.9
E. D. R.	March 3	760	24.4	18.5
	March 12	960	27.9	26.8
	March 19	760	24.4	18.5
	March 28	850	15.1	12.8
	April 5	750	23.5	19.0
J. B.	March 12	800	21.5	17.2
	March 19	485	46.1	22.4
	March 28	550	20.0	11.0
	April 5	580	20.4	11.8
E. N. B.	March 4	870	5.1	4.4
	March 12	900	2.45	2.2
	March 24	920	3.61	3.3
	March 28	890	10.2	9.0
	April 5	890	3.7	3.3
J. K. M.	March 3	700	15.5	10.8
	March 12	530	25.3	13.4
	March 19	510	33.0	16.8
	March 24	400	20.3	8.1
	April 5	420	27.6	11.6
B. H.	March 3	750	6.3	4.7
	March 12	670	7.6	5.1
	March 19	775	2.9	2.2
	March 24	950	4.36	4.1
	April 5	520	4.7	2.4

Strauss, quoted above, says that the daily normal amount of indican is 2–4 mgm. increasing to 60 mgm. under pathological conditions. Now we find that J. R. G. with normal indican had a trace of albumin and casts; that F. S. W. with slightly increased indican had a large trace of albumin and casts, while H. O. P. with considerable increase had no albumin whatever. To sum up the results: In only two cases was an increase of indican associated with albumin, while in three cases of increase of indican no albumin whatever was found. Hence, it is safe to assume that the elimination of toxins by the kidney, as measured by the amount of indican, has little or nothing to do with the albuminuria.

[5] Protein Metabolism in the Aged. Centralblatt für innere Medizin, Feb. 2, 1901.

[6] Zur Methodik der Indican Bestimung im Harn. Zeitscht f. physiolog. Chemie, Vol. xxxviii, p. 196.

Hence this presence of albumin can be traced, in practically all cases, to decided changes in the genito-urinary tract, starting, as it appears, from initial prostatic changes; while the symptoms are often absent and these changes do not seem to immediately threaten life. Yet we cannot regard this albuminuria in the same category as the orthostatic, digestive and other so-called functional forms. The innocuous character of these renal changes can be shown by the fact that in the seven months following these examinations only three of these men have died; one who did not have albumin from other causes, and of the two who did, one died of gastro-intestinal catarrh, and the other, who also had casts, died of cerebral apoplexy.

In conclusion, we may deduce from these examinations: That albuminuria is fairly frequent in old men; that mucinuria is more so; and that both are associated with distinct changes in the urinary apparatus; that these changes are not of serious import; that the low urea excretion, common in old age, cannot be due to retention; and that there is no connection between albuminuria and indicanuria.

THE RECORDING OF ROTATION DEFORMITY BY PROJECTING HORIZONTAL POINTS.

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IN dealing with scoliosis cases in the Carney Hospital, it has seemed to us essential to understand the rotation deformity.

A simple tracing taken about the body at the deformed points would at first sight, seem to be the means to our end. But on consideration, one can easily see why such a tracing in itself is insufficient. There is no basis for estimating the deformity. Therefore, it seemed wise to get a tracing of each patient at one standard plane, besides the afore-mentioned tracing at the deformity, and for this standard plane we have chosen the pelvis at the plane of the anterior superior spine.

Therefore, in order that the estimation should rest upon this basis, it is necessary to have the tracings upon the paper in their correct relative positions, so that the tracings, when superimposed in this manner, would bear that relation to each other which their curves bear on the patient. The problem, therefore, amounts to projecting the contours of the body upon a flat surface and so resolves itself into a geometric proposition.

We must in the first place erect one plane perpendicular to the horizon, and a second one perpendicular to the horizon, and also perpendicular to the first plane. Two such planes are imagined passing through the patient. Where these planes intersect the surface of the body are lines, in which points may be selected to mark on the tracer.

For the establishment of the planes and the selection of the points, Dr. R. Fayerweather and myself had a wooden apparatus set up (See Fig. 1), for permission to build which our thanks are due to Dr. Charles F. Painter.

This apparatus consists of a solid wooden base from one of the sides of which a strong upright rises exactly perpendicular.

On this a cross beam slides upward or downword. From the the ends of this cross beam at right angles to it two arms project in the same horizontal plane and direction. In the arms are drilled pencil holes at corresponding intervals



FIG. 1.

on each arm, so that each pencil hole if continued would run into one on the opposite arm. There is also a pencil hole in the middle of the cross beam in the same horizontal plane as the other pencil holes, and its direction is made perpendicular to those in the arms. The cross beam is made to stay wherever it is placed by means of a thumbscrew.

In recording a case, the steps are as follows: A sheet of paper is fastened on a drawing board with thumb tacks. Upon this a straight line (a–b. See Fig. 2) is drawn by means of a T-square. The patient now stands on the wood base of the apparatus with his back toward the upright. His anterior superior spines are marked and the cross beam is placed and secured at the level of these spines.

Now a skin-marking pencil is passed through one of the holes in either arm, until it leaves its mark on the patient's skin. (Any hole which seems convenient may be selected.) The same operation is done on the opposite side, using the hole corresponding to that used on the other arm. Next, the pencil is passed through the hole in the cross beam until it marks the skin of the back.

We now have three points established on our patient, one behind and two on each side (not counting the anterior superior spines). These three points are by hypothesis in the same horizontal plane, because the arms are in a horizontal plane. All we do now is to select upon the patient the point of greatest deformity and we run our cross-beam with its attached arms up to that point. We have already established three points at the level of the anterior superior spines. By using exactly the same three holes, we mark three other points on the patient at the level of the deformity. By so doing, we have established two planes passing through the patient, one perpendicular to the horizon and the other perpendicular to the horizon and also perpendicular to the first plane.

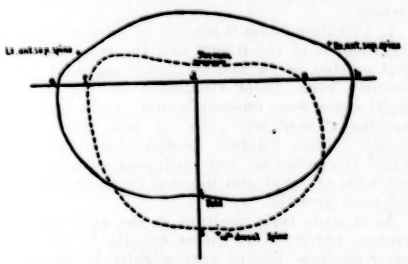


FIG. 2. — Tracings of a case, the unbroken line representing the tracing at the level of the anterior superior spines, and the broken line, the tracing at the level of the 10th dorsal vertebra.

The patient now steps out of the machine and the tracings are made, using a rubber flexible rule containing lead and steel bands. The first tracing is made at the level of the anterior superior spines and is made in two parts, one anterior and the other posterior.

We first fit the tracer to the posterior part at this level, and the three points (*a*, *c*, *b*) marked on the patient are marked upon the tracer before it is removed from the body. The tracer is now laid upon the paper, so that the two side points (*a*, *b*) coincide with the original line laid out. Then the tracing is made upon the paper, marking the third point (*c*) at its point of occurrence in the tracing. From this point (*c*) a perpendicular (*cd*) is erected to the base line, a drawing triangle being used for this purpose. The fold of the buttocks is also indicated on the tracing. We now complete our tracing by putting in the anterior part. We record the anterior superior spines on this part. Then we make a tracing of the posterior part at the plane of deformity where we have marked our three points. We again mark these three points on the tracer and place the tracer on the paper so that the two side points (*e*, *f*) coincide with the base line (*ab*). Keeping these two points (*e*, *f*) in that alignment, we pass the tracer sidewards till the posterior point (*g*) strikes the perpendicular (*dc*). We now record this part of the tracing. All we need now is to complete the anterior part of the tracing from *e* to *f*. As a rule we also record on the drawing, where the spinous process occurs at that level, and number it according to which one it is.

If we wish, we may make tracings at other levels and project them on this same sketch.

In conclusion we may state that, although the geometrical conception is slightly involved, the actual steps take but a few minutes. As to the swaying of the patient, it could make but little difference if he sways after the points are marked, and the actual marking of these points takes but a few moments. However, this should be done as quickly as possible, while the taking of the tracings may be done leisurely.

ANAL FISSURE.

BY T. CHITTENDEN HILL, M.D., BOSTON,
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WITHOUT entering into a discussion as to the exact manner in which this ulcer of the anal canal is produced, however interesting it may be to the proctologist, the writer will endeavor to make a few practical suggestions in regard to the diagnosis, complications and treatment of this at times almost intolerable condition of the rectum.

The pain of anal fissure, as complained of by different patients, varies somewhat as regards character and severity, a fact that is often accounted for when the location of the lesion is discovered. A fissure at the anal margin causes a sharp, shooting, lancinating pain at the time of defecation, which, unless the ulcer is deep, lasts but a few moments. Some of these superficial tears in the mucous membrane at this point heal without treatment, and the individual may be free from pain for a few days or weeks, but if the bowels become constipated and hard masses are passed, the partially healed mucous membrane may again be lacerated. The proper treatment not having been instituted at this stage, the ulcer grows deeper and extends higher as well, when the pain is more often described as of a dull and dragging character lasting for a variable time, associated with the previously mentioned sharp and tearing pain at the time of stool.

A fissure is still further aggravated by the patient's postponing nature's call because of the pain excited, and in this way greater injury is done, since the rectum becomes a storehouse for the feces, thereby setting up a proctitis, as well as rendering the stool dry and hard by the absorption of the normal rectal mucus. The passage of this dry, hard, fecal mass over the exposed nerve fibers not only keeps the fissure from healing, but by the overstretching and irritation of the sphincters brings about a chronic condition of hypertrophy, spasm and rigidity of these

muscles. Thus another factor is added which prevents the ulcer from healing.

If the stools of a patient suffering from a well-established anal fissure be examined, they will frequently be found to be flattened and short, with a nipped-off appearance at the end, caused by the spasmodic contractures of the sphincters and levator ani during defecation. It is in this manner that what originally was but a slight abrasion at the anal orifice gradually becomes the characteristic triangular or oval-shaped ulcer which is known as an anal fissure.

When fully developed, and the muscle fibers of the external sphincter are exposed, the whole musculature of the pelvic outlet becomes rigid and spasmodic so that the passage of the fecal mass excites an almost unbearable pain lasting from half an hour to five or six hours after defecation. As a rule, the pain ceases suddenly, when the sufferer will be fairly comfortable until the next action of the bowels takes place.

Another ulcer frequently met with, but which is not visible at the anal orifice, is the round or circular one situated usually in the posterior line at the interval between the sphincters or over the internal sphincter.

The pain, when the ulcer is situated in this locality, is less acute, and is of a smarting nature at the moment of defecation, but in from ten minutes to half an hour later there begins a dull ache which is often reflected over the sacrum and coccyx, with numbness extending down the back of the legs. Even symptoms simulating uterine and ovarian disease, as well as retention of urine and painful urination, have all disappeared after the healing of this ulcer.

Diagnosis. — However useful as an aid to diagnosis the symptomatology may be, it is often misleading, even as obtained from the most intelligent of patients after careful interrogation. Pain of some character at the time of defecation is the leading symptom of anal fissure, but it is quite essential to bear in mind that it may be produced by an abscess, thrombotic hemorrhoid, a foreign body, stricture, syphilitic, or gonorrheal ulcerations, or even malignant disease; therefore, the necessity of a careful physical examination. To gain the confidence of the patient this should be carried out with as little discomfort as possible.

In cases of anal fissure the writer has no hesitancy in saying that a speculum should rarely if ever be used; yet, on the other hand, a most careful inspection and digital examination of the parts should be made. Often an inspection alone is quite sufficient to diagnose anal fissure; still, one should insist on a digital exploration to ascertain whether such complications as internal hemorrhoids, submucous fistulæ, polypoid growths, etc., exist. By making gentle pressure at different points over the whole of the external sphincter with the tip of the index finger, any undue firmness or hypertrophy of this muscle may be learned, as well as a suggestion of the location of an invisible ulcer above the external sphincter.

Having learned, if possible, the site of the lesion, either by inspection or palpation, the finger should be introduced very gently while making pressure directly opposite to the position of the fissure so as to avoid touching it, and a careful search, especially of the lower inch of the bowel, should be made for co-existent disease. The spasmodic contractures of the external and internal sphincters and even the levator ani can be felt and a conclusion arrived at whether in this particular instance a palliative or an operative plan of treatment would prove most satisfactory.

In this connection it may be of interest to note the location of the fissure and the complications that existed in 24 well-marked cases that have recently been under treatment by the writer. Eight cases were uncomplicated; eight had the so-called "Sentinel" pile (a torn down anal valve); three, internal hemorrhoids; two, external hemorrhoids; two, polypoid growths, and one with external and internal hemorrhoids and polypoid growths.

As regards their position in the anal circumference, twenty were either exactly in the posterior median line or very slightly to the right or left of that position. In two cases, both women, the position was in the middle line anteriorly, while in one man the position was on the right side, midway between anterior and posterior positions. In this list eleven were males and thirteen females. The oldest patient was sixty-seven while the youngest was twenty. In no case was there more than one fissure. A single lesion is almost the invariable rule, except those of syphilitic, gonorrheal or tubercular origin, when more often than otherwise multiple fissures are to be found.

It must be remembered that in this list only typical cases are included, and not the numerous crackings of a delicate mucous membrane that one often sees in hemorrhoidal disease, and are sometimes wrongly spoken of as fissures.

Palliative treatment. — In uncomplicated cases, usually of short duration, where the ulcer is shallow and the sphincters have not yet become hypertrophied and spasmodic, a palliative course of treatment should always be tried and in the large majority of cases will effect a cure. The bowels should be regulated by careful attention to diet, aided by the nightly injection of an ounce of olive oil to be retained until morning, which, aside from its local beneficial action, will secure a soft motion. Next in importance to the regulation of the bowels is that strictest cleanliness should be maintained by bathing the anus night and morning and after each dejection with hot water. The parts should afterwards be dried with a sterilized piece of gauze, and a pad of the same material placed over the anus and kept in position with a T bandage.

Nitrate of silver, either as the pure stick or solutions of various strengths, has long been a favorite application in anal fissure, yet its routine use will often be disappointing. It acts by destroying the unhealthy granulations and the exposed nerve endings, as well as affording a

protective by the formation of an albuminate of silver. Pure ichthyol applied to the fissure with a cotton swab two or three times a week is much better in most cases than nitrate of silver. It seems to act like a charm in allaying the painful symptoms, and often a few applications will prove sufficient.

When using either nitrate of silver or ichthyol, it is wise to previously anesthetize the fissure either by an insufflation of anesthesin or, if necessary, by an application of a strong solution of cocaine. When discharging these patients, they should be warned that if their constipation is not attended to and the parts are not kept clean, they are very liable to have a return of the trouble.

Operative treatment. — In all complicated cases, and in all cases not responding readily to the palliative treatment, where there is much hypertrophy and spasm of the external sphincter, an operation is indicated. The operative procedures are stretching of the sphincters under general anesthesia, or the complete or partial division of the external sphincter under local anesthesia. It is the writer's opinion that all cases are not cured by the stretching operation or by a partial division, but that a single complete division of the external sphincter will effect a cure of any fissure, whether single or multiple, or whatever its location.

To illustrate the operative treatment a typical case is cited.

Mrs. M., age forty-eight, complains of a throbbing pain in the rectum nearly all the time. The pain is much aggravated when the bowels move, and is so severe that she is compelled to lie down for two or three hours after; has slight hemorrhages at times.

Rectal examination: anal orifice firmly closed; just to the right of the posterior median line there is a "Sentinel" pile, the size of a small filbert, the side of which nearest the middle line is grooved by a linear ulcer with undermined edges extending one inch up the anal canal. The interval between the sphincters is barely noticeable, while the external sphincter is hypertrophied and irritable to touch and the levator ani can be plainly felt. The rectum contains firm masses of feces. No other complications exist.

Having previously prepared the patient so as to secure a clean operative field by the administration of a cathartic, the anal region about the fissure and pile was slowly infiltrated with a 1% solution of eucaine. Then, with the left index finger in the anal orifice, the external sphincter was divided in the right posterior quadrant by a careful dissection with a scalpel, while an assistant sponged the line of incision so that I was aware when the deepest fibers of the muscles had been severed. (Two things are important to bear in mind in this procedure: Divide the muscle squarely across at right angles, and do not injure the internal sphincter.) The exuberant granulations were curetted away and the pile removed with curved scissors. The wound was firmly packed with a strip of sterilized gauze and a pad placed over the anus and held in place with a T bandage. The bowels were confined and the patient kept in bed for forty-eight hours. The external anal pad was changed twice daily, but the packing in the incision was allowed to remain until the bowels moved on the second day. After this the patient was up and about attending to her household duties. The wound resulting from the division was very lightly packed every twenty-four hours for the next five days. As is the rule in these cases, very little pain or other disagreeable symptoms followed the operation.

The first action of the bowels will seldom cause the pain that has been endured at each dejection previously. The slight wound at the anal orifice heals completely in from ten days to two weeks, during which time the patient is hardly aware of its existence.

In this instance it will be noted that the writer did not divide the sphincter through the base of the ulcer, but slightly removed from it. The idea is to give the fissure a chance to heal by putting the muscle at rest, which purpose is served equally well wherever the lesion may be located. In fact, if it is situated in the middle line anteriorly or posteriorly, an incision at these points would not succeed in putting the sphincter at rest because of the anatomical arrangement of its fibers

Cases complicated with more than two internal hemorrhoids, or polypoid growths situated above the anal margin, are not suitable for operation under local anesthesia as a rule. Another point that should be borne in mind is that if there is a tendency to the formation of internal hemorrhoids, or if there be any in the first stages of development, an ether operation is advisable that they may be properly dealt with, since a division of the sphincter will sometimes cause them to prolapse.

Medical Progress.

PROGRESS IN PHYSIOLOGICAL CHEMISTRY.

BY J. BERGEN OGDEN, M.D., NEW YORK.

THE EFFECT OF THE INTRAVENOUS INJECTION OF FORMALDEHYDE AND CALCIUM CHLORIDE ON THE HEMOLYTIC POWER OF SERUM.

GUTHRIE [1] found that the intravenous injection of formaldehyde (60 cc. of a 1% solution in sodium chloride solution in a dog of 8.1 kilos) produced a moderate though decided decrease in the hemolytic power of the serum. The decrease was most marked in the serum from blood drawn immediately after the injection was finished, and was quite distinct in the serum of blood drawn fifteen minutes after the injection. The effect of the injection of calcium chloride (1 part of calcium chloride to 4,000 parts of blood) was much the same as that produced by formaldehyde, except that the inhibition of the hemolytic power was greater for calcium chloride than for formaldehyde, particularly in the quantities used. When dog's blood was mixed with calcium chloride before injection into rabbits, the hemolysinogen was either destroyed or greatly weakened, but this was not true of the agglutininogen.

[1] Am. Journ. Physiol., xii, pp. 130-148.

THE EFFECT OF ALCOHOL AND ALCOHOLIC FLUIDS UPON THE EXCRETION OF URIC ACID IN MAN.

Beebe [2] has carried out a series of experiments covering a period of from twelve to twenty days upon young men who were unaccustomed to the use of alcoholic drinks. These men lived on a fixed diet throughout the experiments, and one third of the time were given alcohol in some form. When 50 to 80 cc. of alcohol were taken daily, there was an average increase in the output of uric acid of 16% and a marked increase in the excretion of ammonia. When the alcohol was taken without food there was no increase in the output of uric acid. The marked diuresis caused by the alcohol was found to have no effect upon the excretion of uric acid. If 300 cc. of port wine were taken, the increase in the excretion of uric acid amounted to 46.5%, and the purin bases, calculated as xanthine, were increased 42.5%. Hourly experiments showed that the increase of uric acid after the introduction of alcoholic fluids reached its maximum five hours after the alcohol and the meal had been taken. Some of the metabolism experiments gave evidence of the proteid-sparing effect of alcohol. In one experiment the average daily nitrogen of the fore period was 14.65 gm.; of the alcohol period, 13.82 gm.; of the after period, 14.12 gm.

THE ORIGIN OF CHOLESTERIN IN GALLSTONES.

According to the research of Herter [3] it is probable that inflammatory conditions in the walls of the gall bladder may result in an increase in the cholesterin of the bile. Strong solutions of mercuric bichloride were injected into the gall bladders of dogs which had previously fasted for three days, and after periods of from three to five days the animals were killed. In most instances the gall bladders were much thickened and the epithelium was proliferated and desquamated. The solids of the bile were relatively diminished, while the cholesterin content was much increased. The contents of the gall bladder in these experiments were sterile.

THE PROTEIN OF THE WHEAT KERNEL SOLUBLE IN ALCOHOL AND ITS GLUTAMINIC ACID CONTENT.

Osborne and Harris [4] show that the figures of Kutscher in regard to the amount of glutaminic acid, 19.81%, fall short of the real quantity, 34.2% to 37.33%, yielded by the alcohol-soluble protein of wheat. They also fail to find any evidence which justifies the conclusion that this substance consists of two distinct protein bodies. From investigations on the glutaminic acid content of fractional precipitations of the alcohol-soluble protein, and the close agreement of these precipitations with regard to composition and properties, the authors claim that there is only one protein present, for which the name *gliadin* should be retained. Gliadin furnishes a proportion of glutaminic acid much in excess of that obtained from any other known protein, and greater than that of any single decomposition product yet obtained in a pure state from any other true protein substance, with the exception of protamines. The authors believe that this large proportion of glutaminic acid in a food protein so extensively used is a matter of importance in relation to the food value of this substance.

[2] Am. Journ. of Physiol, xii, pp. 13–55.
[3] Proc. Soc. Exp. Biol. and Med., i, p. 17.
[4] Am. Journ. of Physiol., vol. xiii,

A METHOD FOR THE RAPID DETERMINATION OF CHLORINE IN THE URINE.

According to Dehn [5] the following method is satisfactory. Into a casserole of 50 cc. to 100 cc. capacity are measured 10 cc. of urine and a spoonful of sodium peroxide (free from chlorine). After stirring, the mixture is concentrated on a water bath, and after removing from the bath, 10 cc. of water and sufficient dilute nitric acid are added to give a distinct acid reaction to litmus. A little iron nitrate is added as an indicator and the mixture is titrated with potassium sulphocyanate and silver nitrate according to the method of Volhard.

VOLUMETRIC DETERMINATION OF THE PURIN BODIES (URIC ACID AND THE PURIN BASES) IN THE URINE.

As a result of the investigations of Rudisch and Kleeberg [6] they recommend the following procedure:

To determine the uric acid. To 110 cc. of urine add 55 cc. of $\frac{N}{10}$ silver solution and dilute with ammonium hydroxide to 220 cc. Mix and filter. Two portions of 100 cc., each of which corresponds to 50 cc. of urine, are collected. In the meantime a half-dozen small test tubes are filled for about 1 cm. with a mixture of two parts of nitrous sulphuric acid and one part of starch paste. To one of the above portions of 100 cc. $\frac{N}{10}$ potassium iodide is rapidly added, and after each addition of 2 cc. a small portion, not exceeding 0.5cc., is removed by means of a pipette, which also answers as a stirring rod, and carefully introduced down the side of the test-tube so as to make two distinct layers. The end reaction manifests itself by the formation of a sharp blue ring at the point of juncture. The method is practically the same for the *determination of the purin bases*, one point of difference being that the 110 cc. of urine is diluted to 220 cc. with water instead of with ammonium hydrate.

The necessary solutions are $\frac{N}{10}$ silver solution, $\frac{N}{10}$ potassium iodide solution, a mixture of 25 cc. of conct. sulphuric acid with 75 cc. of water and 1 cc. fuming nitric acid. One cubic centimeter of $\frac{N}{10}$ silver solution equals 0.00336 gm. of uric acid and 0.00152 gr. of purin bases, calculated as xanthin.

SOME NOTABLE CONSTITUENTS OF THE URINE OF THE COYOTE.

Swain [7] gives his results of the study of the urine of the coyote during several months, special attention being given to the presence of kynurenic acid and allantoin. Kynurenic acid has, here-

[5] Ztschr. f. physiol. Chem., 44, pp. 11–17.
[6] Am. Journ. Medical Sciences, cxxviii, pp. 899–910.
[7] Am. Journ. of Physiol., vol. xiii, No. 1.

tofore, been found only in the urine of the dog. The coyote was selected for investigation because of its close similarity to the dog in size and habits, and during the observation it was given a diet of lean meat. The average obtained from a number of analyses was as follows:

Specific gravity,	1,048
Reaction,	slightly acid
	Gm. per liter.
Total nitrogen,	36.381
Urea,	70.144
Uric acid,	.018
Kynurenic acid,	.422
Allantoin,	.264
Total sulphuric acid,	2.995
Ethereal " "	.127

In addition, there separated from the urine on standing a small crystalline deposit which upon investigation was found to be closely allied to Jaffé's "urocaninic acid," but it is probably some new constitutent of carnivorous urine.

THE ELIMINATION OF CREATININE.

Mendel and Closson [8] have determined the total creatinine output in a number of persons under a variety of conditions of diet, and in health and disease. They found that there was a noteworthy excretion of creatinine in vegetarians as well as in individuals who were living on a low proteid diet for long periods. They also found that there was a tendency toward parallelism between the total nitrogen excretion and the elimination of the creatinine group.

DIABETES MELLITUS. A NEW METHOD OF PROGNOSIS.

Mendel and Lusk [9] publish results of their investigation of this subject. A diabetic patient with a low acidrosis and with the urine free from albumin, when put on a meat-fat diet, showed a constant ratio of dextrose to urine nitrogen:

Dextrose: nitrogen:: 3.65: 1.

This ratio was not influenced by fat digestion or fat metabolism, so that the sugar was derived from proteid alone, and the quantity fluctuated with the proteid metabolism as indicated by the urinary nitrogen. The patient upon whom the observations were made showed a complete intolerance for carbohydrates, for 85% of the starch and 80% of the levulose fed were excreted as sugar in the urine, while the withdrawal of the carbohydrates from the diet and the continuance of the same proteid-fat diet had no effect on the excretion of the nitrogen in the urine. A sufficient quantity of meat and fat for the body's needs was readily assimilated. Only 4% of the available energy of the food appeared in the feces. The urea excretion was normal. The sulphate elimination ran normally proportional to the proteid metabolism; the phosphates ran abnormally high as is usual in diabetes.

From the standpoint of prognosis, the procedure would be as follows: If a diabetic patient be put on a diet of rich cream, meat, butter and eggs (meat-fat diet), and the twenty-four-hour quantity of urine of the second day be collected, the discovery of 3.65 gm. of dextrose to 1 gm. of nitrogen would signify a complete intolerance for carbohydrates, and probably a fatal outcome; this ratio has been called the "fatal ratio." A lower ratio between dextrose and nitrogen means that some of the proteid sugar can be utilized. Such a tolerance for sugar may be increased on a meat-fat diet, so that the D–N ratio falls, or the sugar may entirely disappear from the urine in favorable cases.

[8] Am. Journ. Physiol., 13, xiv.
[9] Journ. Am. Med. Asso., July 23, 1904.

Reports of Societies.

THE AMERICAN THERAPEUTIC SOCIETY.

Sixth Annual Meeting.

Held in Philadelphia, May 4, 5 and 6, 1905.

Friday, May 5. — Continued.

(Continued from No. 1, p. 27.)

ELECTRICAL TREATMENT OF ENLARGED PROSTATE AND OF LOCOMOTOR ATAXIA.

Dr. J. V. Shoemaker, Philadelphia, made some extemporaneous remarks in which he said that in cases of hypertrophy of the prostate where the patient refused operation he had found that nothing afforded so much relief and comfort as the use of the constant current, and he exhibited the long electrode, with olive-shaped extremity, which he was accustomed to apply to the gland by way of the rectum. He then exhibited a case of locomotor ataxia in which marked relief had been secured by the use of electricity (static, galvanic and faradaic). Dr. Shoemaker also presented two

CASES OF SKIN DISEASE.

Both were in boys, one of whom was suffering from alopecia areata and the other from generalized xanthoma. The latter was almost unique on account of the extensiveness of its manifestations, and great improvement had resulted from persevering treatment with iron, cod liver oil, arsenic, etc., with an occasional calomel purge. In the other case, hematemics were being used also, together with the local application of the constant current.

Dr. R. T. Morris, New York, read a paper on

THE RECOGNITION AND TREATMENT OF CHOLECYSTITIS.

He said he regarded this condition as one which in the future was likely to attract scarcely less attention than appendicitis. It was characterized by a great number of adhesions, which might be described as cobwebs in the attic of the abdomen. There were two things to be excluded as factors: (1) Eyestrain and (2) normal involution of the appendix vermiformis. In the diagnosis certain points of tenderness in the vicinity of the lumbar ganglia were of service. Another sign was subnormal temperature (from ½ to 1 degree). This he believed to be due to the traction of the adhesions upon the lumbar ganglia. The treatment consisted in opening the abdomen, separating the adhesions, and the prevention of their reformation by the application of aristol or some other agent.

Dr. J. B. Deaver, Philadelphia, agreed with Dr. Morris as to the practical importance of this affection.

Dr. W. H. Porter spoke of a case in which he made a diagnosis of compression jaundice. The patient was afterwards seen by another physician and a surgeon, who said that it was a clear case of biliary calculus requiring immediate operation. The patient (who

lived in the country) was accordingly hurried off to a city hospital and operated upon; when it was found that there were no stone and no adhesions, but simply the condition which he (Dr. Porter) had made out. He believed that this class of cases, where the primary trouble arises in the liver, bear operation very badly, and the patient in question promptly died. Dr. Carl Beck said that he could not altogether agree with Dr. Morris. He did not think it would be quite as easy to make the diagnosis as he would have us believe. There were a great many other conditions which were likely to be confounded with cholecystitis. Another point: One of our foremost surgeons once made the remark that the gall bladder should be treated in the same way as the appendix, and he thought this had been productive of a great deal of harm. The gall bladder was in an entirely different category, because there was not the same amount of danger to life as in acute appendicitis. In cholecystitis there was usually an opportunity for medical treatment, and operative interference need be made, if at all, only after careful and more or less prolonged observation.

DR. G. B. FOWLER, New York, read a paper on the

TREATMENT OF INTESTINAL INDIGESTION.

It was difficult, he said, to conceive of intestinal indigestion which is not in some degree, or perhaps wholly, dependent upon the inefficiency of some other part of the digestive apparatus. Therefore, unless we find the real causes of such indigestion, all our therapeutic measures will prove of no avail. Among the causes of impaired digestion which may find its greatest expression in the intestines, he first mentioned the quality and quantity of food and its preparation, and a considerable portion of the paper was devoted to the subject of diet. While on this topic he gave a diet list which has proved a useful guide to him and his patients. He said, however, that he did not make a fetich of this, as he fully recognized that there are idiosyncrasies to be respected and that it is very dangerous in some instances to allow a patient's mind to become impaled upon a diet list. In speaking of treatment he said that first of all the teeth and mouth must be inspected and the stomach functions looked into. According to the analysis of the gastric juice, acids or alkalies are given, and, in appropriate cases, lavage resorted to. Where the intestine is the center of disturbance, he advocates large doses of alkali, and takadiastase is also often given with advantage. He now uses pancreatin, but rarely. Intestinal antisepsis he considers a very difficult thing to accomplish, but he has had some success with acetozone and oil of cinnamon. If impaired glandular action and the accompanying symptoms are due to a neurosis, drugs alone are of little avail, and the best results will not be attained until the nervous system is restored to its equilibrium. A glass of hot water containing sodium bicarbonate should be taken regularly an hour before meals, and should a cathartic be required, sodium phosphate may be occasionally substituted in the water before breakfast. Either strychnine or nux vomica should generally be taken in gradually increasing doses to toleration. For the nervous symptoms he has found the triple valerianates, with or without cannabis indica, of most advantage. Dr. Fowler went on to say that the more he saw of such digestive derangements, the more he had become impressed with the fact that they are largely of neurotic origin. Therefore much benefit is to be derived from proper exercise in the open air, mental rest, travel, etc. He has had the greatest success with hydrotherapy, together with judicious massage. In colitis he generally gives irrigation a fair trial, but the results have not proved very satisfactory.

DR. R. W. WILCOX, New York, read a paper on the

TREATMENT OF CHRONIC DIARRHEA,

of which the following is a synopsis: Diarrhea being a symptom, the cause should be ascertained. This may be: (1) mechanical, (2) nervous, or (3) hemic. Under each division there are subdivisions — each subdivision representing an etiological factor which is the basis for treatment. The last should be considered under (1) dietetic, (2) hygienic, and (3) medicinal. Lastly, certain remedies and methods should be avoided. Dr. Wilcox is a warm advocate of intestinal antisepsis, which, he said, is certainly logical, eminently practical, and well established as the proper method of procedure in appropriate cases. Of improper methods of treatment he cited opium, which he considers admissible only for the purpose of checking excessive peristalsis, after the alimentary canal has been thoroughly emptied. Again, astringents, when introduced into the alimentary canal, do not astringe; they are even likely to irritate. In conclusion, he said, that he had endeavored to emphasize the importance of recognising that the diarrhea is not always due to demonstrable changes in the alimentary tract. Next, that much as symptom treatment is to be deprecated, yet pending further knowledge, we must divide our diarrheas into classes, based upon their causation, and then proceed to treat them intelligently in the light of the therapeutics of to-day.

DR. W. H. PORTER, New York, read a paper on

RECTAL ALIMENTATION.

After an elaborate discussion of the questions involved, he said: That the system, when expending very little energy, can maintain life for a long period on a very limited supply of food is abundantly proved by an almost endless amount of clinical data. It is unquestionably this fact alone which has led to the oft-expressed belief that rectal alimentation is a very valuable method of feeding. Rectal alimentation, however, by reason of the limited quantity of food which can be utilized in this manner, is at best a very poor substitute for the natural method. It does, in a measure, relieve the pangs of thirst and hunger which of necessity follow the slow process of starvation which occurs when the stomach and small intestine are thrown out of commission. So far as Dr. Porter's personal experience has gone, rectal alimentation has proved most unsatisfactory. He has tried all forms of substances, predigested and otherwise, and with but one result, namely, progressive starvation without the more intensely distressing symptoms.

Dr. Reyburn took issue with Dr. Porter, and stated that he had for many years employed rectal alimentation with very gratifying results.

SYMPOSIUM ON SPECIAL THERAPEUTICS.

DR. J. B. WHITE read a paper on the

ETIOLOGY AND TREATMENT OF INFANTILE ATROPHY.

He said that although authors had given varied definitions of infantile atrophy, all finally reach the same conclusion, that the prime condition is due to derangement, from obscure causes, of the functions of absorption and assimilation. A very significant fact is that the more obstinate and fatal cases are born with a decided predisposition to tuberculosis or manifest the specific diathesis. Intestinal irritation is very influential in awakening latent morbific predisposition in the mesenteric glands, while hepatic torpor gives rise to congestion of the entire portal circle. It is, therefore, of great practical importance to give attention to these parts. When diarrhea is present, intes-

tinal antiseptics are called for, and Dr. White has found guaiacol carbonate, with a small amount of menthol and eucalyptol, the most satisfactory. Of course, every effort must be made to improve the general nutrition, and cod liver oil or Russell's emulsion are often useful. The gold salts possess a remarkable value as eutrophics, and are especially indicated in such cases of atrophy as arise from the specific inheritance. Mercuric chloride is naturally of great importance in syphilitic cases, and gold and sodium chloride are often of great service if the tubercular diathesis is present. Other remedies referred to were barium and calcium chlorides and thymus gland extract. In conclusion he said he was quite convinced that the conditions resulting in atrophy begin during fetal life, and thought it probable that at this time proper medication, directed to the mother, might reduce if not entirely avert the tendency to that form of fetal debility which at birth predisposes to atrophy.

(*To be continued.*)

Recent Literature.

The Historical Relations of Medicine and Surgery to the End of the Sixteenth Century. An Address delivered at the St. Louis Congress in 1904. By T. CLIFFORD ALLBUTT, M.A., M.D., Hon. M.D. (Dublin), Hon. LL.D. (Glasgow), Hon. D.Sc. (Oxf. and Vict.), F.R.C.P., F.R.S., F.L.S., F.S.A., Regius Professor of Physics in the University of Cambridge, etc. London: Macmillan & Co., Limited; New York: The Macmillan Co. 1905.

Dr. Allbutt's English style is not the least of his claims to recognition. The small volume before us, which is his address delivered at the St. Louis Congress in 1904, combines a detailed and scholarly consideration of the historical relations between medicine and surgery with a charm of expression which is unfortunately rare among medical writers. We commend the address both to students of history and to students of style, as well as to those interested in the fundamental problem under discussion of the complex relationship between medicine and surgery, both past and present.

The Intestinal Catarrhs: Being a Clinical Study of Colitis, Appendicitis and their Allies; with a special new section on Sprue. By EDWARD BLAKE, M.D., Member of the Royal College of Surgeons; Life Associate Sanitary Institute, Great Britain; Member French Hygienic Society; Honorary member Michigan Medical Society. Second edition. Chicago: W. T. Keener & Co. 1905.

This is a rambling sort of book of 356 pages, and though its title is "Intestinal Catarrhs," it touches in its wanderings a good share of the diseases to which flesh is heir. The author has evidently read widely, and it must be acknowledged puts the literature of a subject before the reader in an unusual manner.

There is much that is intentionally humorous in the volume, but not infrequently the serious portions are quite as amusing. In the discussion of the literature of appendicitis occurs the following paragraph: "But it was not till as late as 1886, that Fitz first put the matter on a sound, definite basis, thus digging the grave of the good old 'cherry-stone theory.'"

The Anatomy of the Brain. By J. F. BURKHOLDER, M.D. 8vo, pp. 174, with 36 full page plates (five of them colored). G. P. Engelhard & Co. 1904.

Recognizing the importance of dissection and laboratory work in the study of the anatomy of the brain, and the difficulty of securing sufficient human material for that purpose, the writer and Professor Donaldson have used the sheep's brain with very satisfactory results. As a further aid in that study, since the literature of the subject was scanty, the writer has made a series of drawings from actual dissections. To these are added a brief descriptive text and guide to dissection. There can be no question that a study of one of the simpler types of brain with careful dissection is of great benefit as a preliminary to the study of the more complex human brain, and for that purpose this little book can be most heartily recommended as a guide. The descriptions are clear and the plates most satisfactory. The writer has adopted the Basle anatomical nomenclature, and unfortunately, like some other American anatomists, he has also done violence to good English by using such monstrosities as caudad and cephalad.

A Textbook of Mechano-Therapy (Massage and Medical Gymnastics). For Medical Students, Trained Nurses and Medical Gymnasts. By AXEL V. GRAFSTROM, B.Sc., M.D., Attending Physician to the Gustavus Adolphus Orphanage, Jamestown, N. Y. Second edition, revised, enlarged, and entirely reset. Illustrated. Philadelphia, New York, London: W. B. Saunders & Co. 1904.

Dr. Grafstrom embodies in this second edition of his textbook the principles of mechano-therapy as practiced at the Royal Central Gymnastic Institute of Stockholm. The book makes no pretence to originality, but has the greater worth of stating in concise language the various methods which by long experience have been found useful in the treatment of diseases by mechanical means. The illustrations, apparently drawn by the author, although at times crude, illustrate the points intended, adequately. Details of gynecological and ocular massage have been omitted.

Textbook of Diseases of the Eye. By HOWARD F. HANSELL, A.M., M.D., and WILLIAM M. SWEET, M.D., with chapters by C. R. HOLMES, M.D., CASEY A. WOOD, M.D., D.C.L., and WENDELL REBER, M.D. Philadelphia: P. Blakiston's Son & Co. 1903.

In the preparation of this volume it has been the intention to place in the hands of physicians and undergraduates a book which shall briefly, yet sufficiently, describe the commoner conditions

of the eye in disease and therefore the reader need not be surprised that less space has been allotted to certain subjects, refraction, for instance, than is usually the case with other textbooks on ophthalmology. Prompted by long experience derived from teaching and by a desire to impart essentials without unduly increasing the difficulties that the student labors under in acquiring even a superficial knowledge of this subject, theory, scientific detail and description of such uncommon conditions as would ordinarily fall to the lot of the special practitioner have in most instances received but brief mention or have even been entirely omitted. The danger of going too far in the wrong direction, by placing undue emphasis upon the importance of external diseases and results of trauma, has been happily avoided and a proper balance has been maintained throughout. The authors have drawn freely upon many of the recent textbooks, have illustrated their own production by drawings, many of which are original, from private and hospital sources, and have not hesitated to enlist the cooperation of several well-known writers who have prepared chapters upon topics about which they have shown interest and familiarity. It is attractive in appearance, contains 532 pages, 256 illustrations, and is well indexed. W. D. H.

The Development of the Human Body. By J. P. McMURRICH. Second edition, revised and enlarged. 12mo, pp. 539. Philadelphia: P. Blakiston's Son & Co. 1904.

The second edition of this excellent little work should meet with a generous recognition, for it may be considered as on the whole the best textbook of human embryology now available in any language. The author has taken the opportunities afforded in the preparation of his second edition to correct certain errors and faulty expressions which had unfortunately crept into the previous issue, and he has added a small amount of new material. Aside, however, from the numerous small amendments, the change in the book is not great. Two new figures have been added, and a few have been replaced by better ones. The additions to the text are not extensive, but they have done much to fill up the gaps, thus rendering the whole more symmetrical and complete. It has now become a thoroughly authoritative and trustworthy manual. As stated in our review of the original edition, the author shows a marked talent for clear and concise presentation of his subject, and in a high degree the mastery of the problems of embryology, so that throughout that which is embryologically and morphologically most important is given due prominence. In short, the work in its new edition is to be cordially recommended. C. S. M.

The Surgery of the Heart and Lungs. A History and Résumé of Surgical Conditions found therein, and Experimental and Clinical Research in Man and Lower Animals, with reference to Pneumonotomy, Pneumonectomy and Bronchotomy, and Cardiotomy and Cardiorrhaphy. By BENJAMIN MERRILL RICKETTS, Ph.B., M.D. New York: The Grafton Press. 1904.

This book consists of two parts: first, an extensive bibliography of the literature of the surgery of the heart and lungs; and second, the results of a series of original experiments by the author, on animals. It is conveniently arranged, with the symptoms, diagnosis and treatment of each disease given as concisely as is practicable.

The author has paid great attention to the historical presentation of the various subjects and this adds a charm to the book. It is not a book that is needed by every practitioner, but one that will constantly be referred to by those who are looking up the surgery of the heart and lungs.

There is a complete but not a discriminating bibliography. It forms an excellent reference book to the surgery of the heart and lungs and reflects a great deal of credit upon the writer.

The book is well illustrated, many of the plates being original. The author's experimental work is suggestive, but not always conclusive.

Examination of the Urine. By G. A. DE SANTOS SAXE, M.D., Assistant Pathologist to the Columbus Hospital, New York City. 12mo volume of 391 pages, fully illustrated, including 8 colored plates. Philadelphia, New York, London: W. B. Saunders & Company. 1904. Flexible leather.

This work on the examination of the urine is concise and yet explicit. It closely resembles in its subject-matter and arrangement a well-known text-book on the same subject, published in 1900 and now in its second edition. The size of the work by Dr. Saxe is a distinct advantage as a laboratory volume; on the other hand, the effort to prepare a small book has necessitated the omission or mere mention of data which are of value. This is notably the case in Part IV under "Diagnosis of Diseases of the Urinary Tract."

We cannot agree with Dr. Saxe that the specific gravity of a normal urine is as low as 1,012 with a normal quantity of urine (1,500 to 1,600 cc.) in twenty-four hours (p. 37), or that an excess of hydrochloric acid in the stomach is a cause of an alkaline reaction of the urine (p. 37). We doubt the practical utility of the determination of the total acidity of the urine (p. 46), and the statement made (p. 53) with reference to the permanent absence of albumin in chronic interstitial nephritis. We would also call attention to the fact that the formula for Fehling's solution given on page 93 is not the original formula of Fehling; the solution resulting from the formula given should be designated "modified Fehling's solution." There are a number of typographical errors which we presume will be corrected in later editions.

On the whole, the book is satisfactory, and the publishers have demonstrated their skill in book making.

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A SUMMER CAMP FOR TUBERCULOSIS.

During the relatively short period of its existence the Boston Society for the Relief and Control of Tuberculosis has been active in combating the disease for which it was founded. A project said to be unique in this country, although in use in the neighborhood of Berlin in Germany, has recently been set on foot with every prospect of success. This project is the establishment of an open-air camp for consumptives in the immediate vicinity of the centre of the city. The place chosen is the top of Parker Hill, Roxbury, the highest point of land in Boston. Early and so-called curable cases only are taken and no fee is required. The arrangements of the camp are simple. Several tents are placed in an apple orchard which are capable of accommodating fifty persons at one time. No provisions are made for the cases to remain at the camp over night. They are met at a certain point in the neighborhood of the camp each morning by a suitable vehicle to avoid the fatigue of the uphill walk. Reaching the camp the patients are provided with a liberal luncheon of eggs, milk and bread. Later they are given a more elaborate midday meal and immediately before leaving for their homes in the afternoon they are again given suitable food. Games and adequate books are also provided and the women are urged to bring their sewing. Such washing of the patients as is necessary is done out of doors, and the furniture throughout is of the simplest variety. In addition to the actual benefit which is likely to result from a systematic out-of-door life, it is proposed to give a certain number of open-air lectures on general hygiene with special reference to the prevention of tuberculosis. The patients, for example, will be told by physicians chosen for this purpose the principles of ventilation, how to select proper food and methods of avoiding a communication of the disease to others.

We see in this admirable plan of the Association for the Control of Tuberculosis a step in progress which cannot fail to be of the greatest value from several points of view. In the first place, it is evident that the out-of-door life itself, together with the mild discipline which will be exerted over the patients, will do much toward eradicating their disease, as well as toward fitting them to meet the conditions of their lives, whatever they may be. The plan is furthermore commendable in that it is designed to accomplish results of importance at the smallest possible expense. The plant itself when once acquired should be reasonably durable and relatively inexpensive. Naturally, food, simple though it may be, must be of the best quality, and herein no doubt the Association is looking forward to its chief expense item. This should, however, be easily met by such funds as the Association may have at its disposal, and also by public-spirited citizens who, with small investigation, must see the far-reaching benefit likely to come from the proposed plan. Finally, it is apparent that such camps may be almost indefinitely extended if this first experiment proves a success. Land for such purposes within a few miles of this or other large centers of population should not be difficult to obtain for this purpose, and, as has been suggested, a further equipment may certainly be supplied at a reasonable cost. There would undoubtedly be an advantage for certain patients could they spend the night as well as the day at such an encampment. Such an extension of the work would add much detail and a certain complication, but would, nevertheless, be a natural development of this first idea. Many of the patients could undoubtedly make themselves useful about the camp and in this way indirectly pay for the services rendered them. We have no doubt our energetic Association will extend its work as opportunity offers. In the meantime we wish it success in the plan which is already well under way.

MEDICAL LITERARY STYLE.

In a recent number of the *British Medical Journal* considerable space is given to a discussion of a matter which bears reiteration, namely, the defect of style in medical writing. It is somewhat notorious that physicians fail in the quality of

style more than men of other professions. However this may be, there is certainly ample room for improvement, and this service Prof. Clifford Allbutt has attempted to render in his book entitled "Notes on the Composition of Scientific Papers." In this book Dr. Allbutt makes many suggestions which should be of benefit to the young or inexperienced writer. He begs the would-be author to attempt to touch the keynote of his subject in his opening sentences and to stop when there is nothing more to say. If these two somewhat self-evident suggestions could be followed, together with a willingness to say only what is necessary to convey the meaning, much progress would be made toward the improvement of the style of medical writing in general. The idea is apparently firmly fixed in some minds that thoroughness and accuracy of statement are not possible except through diffuseness of style. Much as we have gained from our German confrères in every department of scientific medicine, we have likewise suffered from a more or less unconscious imitation of their style of medical writing. There are naturally many exceptions, but the average German medical writer, particularly if he be young and eager to spread his name over many pages of a scientific journal, is an extremely poor guide to follow. There can be no question that quite apart from the cumbersomeness of the German language itself very much more space is used in the writing of an ordinary medical article than is necessary or desirable. We quite agree, however, with our contemporary when it says that without practice in writing the mere perusal of directions, and even the reading of good English, is not sufficient to produce a satisfactory style. The knowledge of what one wishes to say, a willingness to say it in the simplest language and a fixed principle not to say more than the subject absolutely demands will do much toward rendering an article readable, and that after all is what we require in our scientific descriptions. To strive after a literary style is, moreover, in our opinion a somewhat hopeless and thankless task, and surely not to be expected of the active physician. It is not to be expected that every physician, or even that many physicians, will become great writers. What we need to do is to raise the average, and this no doubt may in a measure be accomplished by a devotion to certain somewhat simple rules. The following quotation from our contemporary's editorial is no doubt true, but hardly applicable to the average physician, who is desirous of expressing himself in words:

"Let no one, however, think that he can learn to write from any book. Professor Allbutt will show him what to avoid and what to strive after; but if he is to profit by the teaching of the master he must take endless pains to apply it in practice. And even when he may be tempted to think that he has acquired the art, he should remember that the greatest writers are those who take the greatest pains. Easy writing, it has been truly said, makes hard reading. John Henry Newman tells us that he often wrote chapters over and over again, besides making innumerable corrections and interlined additions; Huxley thought nothing of writing a page four or five times over if nothing less would bring out the words which expressed all that he meant and nothing more than he meant; Ruskin says that 'a sentence of "Modern Painters" was often written four or five times over and tried in every word for perhaps an hour — perhaps a forenoon — before it was passed for the printer.' It is easy enough to be verbose, turgid and tangled; it is easy to be brief and obscure, but to be at once simple and exact, concise and clear, is difficult to all, and most difficult to those who have in them the qualities that make a writer."

MEDICAL NOTES.

THE DEATH OF PROFESSOR NOTHNAGEL. — The death of Professor Nothnagel of Vienna on July 7 is announced. An obituary notice will follow in a later issue.

HEALTH OF CHICAGO. — According to the *Bulletin of the Chicago Health Department*, it appears certain that a new record for the city will be established during 1905. This prediction is based on the fact that the average annual death-rate for the first six months of each year for the past ten years has been 15.51 per one thousand of population, whereas the average mortality for the second six months of each year is 7.48% lower. Comparing these figures with those of the first six months of 1905, and estimating the mortality of the second six months on the basis of previous years, it appears that the annual death-rate for 1905 will be 13.56%, the lowest ever recorded.

ADDRESS BY DR. HOWARD KELLY. — Dr. Howard Kelly of the Johns Hopkins University has recently delivered an address before the British Gynecological Society on the subject of Tuberculosis of the Kidneys, which has apparently been most favorably received by the British medical press. He considered the evolution of the subject as follows:

1. The period of recognition of the disease, up to 1860.
2. The collection and sifting of a number of

cases with both pathological and clinical histories in view, 1863–1885.

3. The stimulus to surgical thought given by Simon's first renal extirpation in 1871.

4. The discovery of exact methods of diagnosis, from 1876–1893.

5. A period in which the development of the surgical technique has been wrought out in the hands of a few specialists, 1890–1900.

6. The final period, the gradual transportation of the perfected operation into the hands of surgeons at large, — may I say, from this present date on, 1905?

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, July 12, 1905, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 16, scarlatina 16, typhoid fever 11, measles 24, tuberculosis 50, smallpox 0.

The death-rate of the reported deaths for the week ending July 12, 1905, was 17.32.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, July 8, 1905, was 183, against 172 the corresponding week of last year, showing an increase of 11 deaths, and making the death-rate for the week 15.54. Of this number 106 were males and 77 were females; 180 were white and 3 colored; 104 were born in the United States, 75 in foreign countries, and 4 unknown; 30 were of American parentage, 127 of foreign parentage, and 26 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 35 cases and 1 death; scarlatina, 13 cases and no deaths; typhoid fever, 10 cases and 3 deaths; measles, 29 cases and 1 death; consumption, 29 cases and 26 deaths; smallpox, no cases and no deaths. The deaths from pneumonia were 11, whooping cough 0, heart disease 21, bronchitis 4, and marasmus 1. There were 18 deaths from violent causes. The number of children who died under one year was 29; the number under five years, 37. The number of persons who died over sixty years of age was 40. The deaths in public institutions were 71.

Cases of cerebrospinal meningitis reported for the week were 5.

Summer Playrooms and Kindergartens. — The Episcopal City Mission has recently opened its summer playrooms and kindergartens, a charity which takes from the streets of the tenement districts many small children during the summer months.

Death of Dr. Edward S. Wood. — The death of Dr. Edward S. Wood, Professor of Chemistry at the Harvard Medical School, on July 11, at Pocasset, Mass., is announced.

Day Sanatorium for Tuberculosis. — The Boston Association for the Relief and Control of Tuberculosis announces that applications for treatment may be made by mail to the office of the Association, 8 Beacon Street, Room 55. Further facts regarding the sanatorium may be found in another column.

Heat Prostrations. — The excessive heat of the first days of this week resulted in an unusually large number of heat prostrations in Boston and throughout New England. According to the weather bureau Monday was the hottest day with two exceptions since the heat has been recorded in Boston. On that day alone there were fifteen prostrations in the city with one death. A similar condition has prevailed in New York, where ten deaths were reported. The extraordinary heat in Northern Germany has been almost unprecedented.

NEW YORK.

Prevention of Tetanus. — This year both the State and City Health Departments took the precaution of preparing and distributing in advance a large amount of tetanus antitoxin, with a view to preventing the mortality from tetanus which has of late years resulted from Fourth of July accidents. In the city hospitals all patients with wounds at all likely to be followed by the disease were given immunizing injections of the antitoxin.

First Trip of Floating Hospital. — The first trip of the floating hospital of the St. John's Guild to the Guild's Seaside Hospital at New Dorp, Staten Island, was made on July 5. About sixteen hundred women and children were taken, and the expenses of the trip, $250, were paid by Frank J. Gould, the brother of Miss Helen Gould. The St. John's Guild has distributed 50,000 tickets for the floating and seaside hospitals to physicians, hospitals and dispensaries for the present season. Last year nearly 28,000 women and children went on the excursions.

Accidents to Physician. — On July 4, Dr. T. Harris Cherry of the Hudson Street Hospital, while on his way in an ambulance to a "hurry call," was seriously injured in a collision with a trolley car. He received two severe scalp wounds, fractures of three ribs and other injuries. The driver of the ambulance was also injured, but

less seriously. A similar accident occurred in Brooklyn on July 6, when Drs. A. C. Hutchinson and Henry Zimmer, of the Methodist Episcopal (Seney) Hospital were injured. Both received severe scalp wounds and Dr. Zimmer, it was feared, a fracture of the skull.

REVERSAL OF A DECISION IN A SUIT FOR DAMAGES. — The Appellate Decision of the New York Supreme Court has just handed down a decision reversing an order of the lower court awarding $12,000 for injuries received in the collision in the railroad tunnel between the Grand Central Station and Harlem, on Jan. 6, 1902. The plaintiff in the original case was Alfred W. Newton. He has since died, and his widow was the respondent to the appeal, as his executrix. The testimony showed that Newton was playing whist when the collision occurred, that the shock was not sufficient to upset the board on which the cards were played, and that the game was resumed until the sight of the injured being carried past the car indicated that a serious accident had occurred. At the trial, Newton testified that from the day of the collision he became ill and grew steadily worse. The suit was not based upon the receipt of any direct physical injury, but on the results following the alleged nervous shock suffered at the time of the accident. The majority of the Appellate Court held that while the medical testimony had shown that nervous or mental shock would be sufficient to cause Newton's condition on May 2, 1902, there was no evidence whatever to show that any nervous or mental shock was produced by the collision.

JUNE MORTALITY REPORTS. — The weekly reports of the Health Department show that during the month of June the mortality in the city represented an annual death-rate of 17.23, as against 18.27 in May and 20.76 in June, 1904. The corrected death-rate, excluding non-residents and infants under one week old, was 16.28. In the comparison of the mortality with that for June, 1904, it must be remembered that in that month the number of deaths was augmented about one thousand by the terrible disaster on the steamboat *General Slocum*. Among the diseases which showed a decreased fatality are the following: The weekly average of deaths from diphtheria and croup declined from 34.25 in May to 28 in June; the weekly average from scarlet fever from 13.75 to 9; from whooping-cough, from 10 to 9; from influenza, from 4 to 1; from pneumonia, from 106.5 to 70.25; from bronchopneumonia, from 93.75 to 69; from acute bronchitis, from 28 to 20; from pulmonary tuberculosis, from 173.5 to 159; from Bright's disease and nephritis, from 106.75 to 105.5; from organic heart diseases, from 107 to 89; and from epidemic cerebrospinal meningitis, from 82.75 to 44.25. Last year the weekly average of deaths from the last-named disease in the month of June was 51.5. Among the diseases which showed an increased mortality were the following: The weekly average of deaths from diarrheal diseases increased from 45 to 125; the weekly average from diarrheals under two years of age, from 35 to 113.75; from measles, from 14 to 23.75; from typhoid fever, from 6.5 to 9.75; and from cancer, from 50.75 to 54.

AN ENTERPRISING ADVERTISER. — During the past week the following advertisement appeared in a New York newspaper:

"I agree to sell my two hearts, the buyer being entitled to same after my death."

It is said that the advertiser, who is a carpenter, thirty-five years of age and in good health, presents in his body the extraordinary anomaly of two distinct hearts, and, as indicated, he desires to turn them to good advantage during his life by bequeathing them to the highest cash bidder.

Obituaries.

PROFESSOR JOHANNES v. MIKULICZ-RADECKI.

PROFESSOR MIKULICZ died in Breslau on June 14, from cancer of the stomach. In December, 1904, he discovered a tumor in the region of the stomach which was operated upon with the result that the disease was shown to be much more wide-spread than was at first apparent, and that nothing could be done to relieve the situation. In spite of the serious character of his disease, he again took up his work in February, but was obliged to seek rest and recuperation soon after, and giving up with much regret his plan to attend the Orthopedic and Surgical Congress in the spring at Berlin, he died in June, about six months after the discovery of his malady.

He was born on the sixteenth of May, 1850, in Czernowitz, and undertook the study of medicine in Vienna. During the early period of his study he shared his time between medicine and the piano. His final decision to devote himself to medicine rather than to music was made late in his student career. After three and a half years' attendance at Billroth's clinic he became his assistant. In 1880 he became privatdocent in surgery, and in his thirty-second year he was called to Krakau as ordinary professor of surgery. At the end of five years he was called to Königsberg, and again after three years to Halle. After

a few months' activity in this position he became professor at Breslau where he remained up to the time of his death, although receiving flattering offers from other universities.

Professor Mikulicz will be known for his work on a great variety of surgical subjects and for his comprehensive knowledge of surgery and its allied branches. Among his most notable contributions are his work on genu valgum, the surgery of the digestive tract, the operative treatment of Graves' disease and the whole subject of the treatment of wounds, and asepsis in its broadest phases. His pioneer work also in the development of modern gynecology is worthy of note. He consistently opposed the tendency to divide surgery into smaller specialties and preserved the organization of his clinic on the broadest plan. As a teacher he was inspiring to his students, among whom are numbered many surgeons who have since attained positions of distinction. His published work includes several hundred titles, and his membership in foreign societies was extensive, although he never attained the chairmanship of the German Surgical Society. His journey to America a few years ago, and his visits to many of the cities of this country, will be remembered. He impressed Americans during that visit as a man of peculiarly wide knowledge and deep technical skill. Medicine unquestionably loses in him one of its leading men, and one who has done much more than most of his colleagues in advancing the science of surgery along the broadest lines. His somewhat premature death will be mourned in America almost in the same degree as in Europe.

PROFESSOR KARL WERNICKE.

Within a few days of the death of Professor v. Mikulicz the death of Karl Wernicke was also announced. Wernicke was born in 1848 in Tarnowitz in Upper Silesia, studied and received his degree in Breslau in 1870, and in 1878 became Westphal's assistant in the Berlin clinic of psychiatry and neurology. In 1885 he became extraordinary professor and in 1890 ordinary professor in psychiatry and neurology at the University of Breslau. Within a year he had become Hitzig's successor at Halle.

Wernicke was a pupil of Meynert, and he must be regarded as the only one who has consistently continued his work through life in Meynert's spirit. As a psychiatrist Wernicke must be given a high place for his originality and for the number and character of the problems which he undertook to solve. In the year 1874, when but twenty-six years old, he published his work on sensory aphasia, which did much to round out the knowledge inaugurated by Broca's discovery of the motor speech area. In 1881 his textbook of Disease of the Brain began to appear, a work which is still consulted. Wernicke's aim was to establish psychiatry on a firmer scientific basis, and to bring it, as far as possible, into association with brain anatomy and brain physiology. He was also a keen clinical observer, and we are indebted to him for several new clinical pictures. In spite, however, of his capacity as an investigator, Wernicke had several disappointments, among which were the failure to be called either to Berlin or to Munich when vacancies occurred at those universities. His professional activity was confined to small universities, and at one time, for many years, at Breslau he was deprived of a clinic. In spite of such disappointments, not uncommon among German physicians of great distinction, his work was constant, suggestive and useful in the progress of that department of medicine to which he devoted his life. His place, like that of Professor Mikulicz, will be hard to fill.

Miscellany.

AMERICAN HOSPITAL AND TRAINING SCHOOL FOR NURSES AT CONSTANTINOPLE.

On July 6 there was held at the United Charities Building in New York a meeting of the board of managers of the recently incorporated American Hospital and Training School for Nurses at Constantinople, Turkey. W. Ives Washburn was elected president, other officers were elected, and a constitution and set of by-laws were adopted. The hospital is to be located in the suburb Scutari, in the vicinity of the American College for Girls, and in establishing it, it is planned to transfer and unite with it an institution of similar character which was founded seven years ago by Dr. T. S. Carrington in connection with Anatolia College. At the outset, pending the erection of permanent buildings, a suitable building will be hired, and eight physicians and surgeons and two American nurses will constitute the staff. It is desired that the sum of at least $10,000 should be contributed for the inauguration of the undertaking.

STATE OF NEW JERSEY BOARD OF MEDICAL EXAMINERS.

At the annual meeting of the State Board of Medical Examiners of New Jersey, held at Long Branch, N. J., July 5, the following resolution was adopted:

Whereas, The educational and examining standards for the medical license of New Jersey are at least equal in all respects to those of New York, and in some respects higher, and

Whereas, The degree of unreasonableness in the matter of interstate endorsement on the part of New York cannot be further ignored, therefore be it

Resolved, That on and after Oct. 16, the date of the next regular meeting of this Board, the endorsement of medical licenses issued by New York will be suspended until further notice.

E. L. B. Godfrey, M.D.,
Secretary.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JULY 1, 1905.

CITIES.	Population Estimated, 1904.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diphtheria and croup.	Whooping Cough	Cerebro-spinal Menin-gitis.
New York	3,508,644	1,404	585	36.32	10.46	1.42	.57	1.56
Chicago	1,999,750	439	123	27.33	9.34	2.50	2.05	—
Philadelphia	1,407,988	441	148	35.13	6.80	2.63	1.13	.45
St. Louis	633,606	—	—	—	—	—	—	—
Baltimore	542,229	247	114	40.88	6.88	.81	.81	.40
Cleveland	444,251	—	—	—	—	—	—	—
Buffalo	400,645	—	—	—	—	—	—	—
Pittsburg	362,403	—	—	—	—	—	—	—
Cincinnati	338,277	—	—	—	—	—	—	—
Milwaukee	325,990	—	—	—	—	—	—	—
Washington	300,776	—	—	—	—	—	—	—
Providence	196,744	51	15	21.57	5.88	—	—	1.96
Boston	617,950	181	51	22.65	11.05	1.66	—	2.76
Worcester	136,925	35	10	17.14	8.57	—	2.86	—
Fall River	119,349	29	15	44.82	13.79	—	3.44	—
Lowell	104,402	41	13	17.47	7.32	—	—	—
Cambridge	100,998	30	4	20.00	10.00	—	—	—
Lynn	79,875	12	1	16.67	—	—	—	—
Lawrence	72,848	25	13	40.00	4.00	—	—	—
Springfield	72,020	16	3	12.50	—	—	—	—
Somerville	70,413	14	3	28.57	—	—	—	—
New Bedford	69,863	19	6	10.52	5.26	—	—	—
Holyoke	50,538	17	5	35.29	—	—	—	5.88
Brockton	46,601	11	2	36.36	—	—	—	—
Newton	39,310	11	1	18.18	—	—	—	—
Haverhill	39,061	14	3	28.57	7.14	—	7.14	7.14
Malden	37,205	6	2	33.33	16.67	—	—	—
Salem	37,188	16	5	25.00	—	—	—	—
Chelsea	36,499	7	—	42.80	—	—	—	—
Fitchburg	36,335	10	4	10.00	10.00	—	—	—
Taunton	34,577	—	—	—	—	—	—	—
Everett	30,209	8	1	25.00	—	—	—	12.50
North Adams	29,201	7	1	14.30	—	—	—	—
Quincy	26,798	5	2	20.00	—	20.00	—	—
Gloucester	26,121	7	2	—	14.30	—	—	—
Waltham	25,797	6	—	—	—	—	—	—
Brookline	25,576	—	—	—	—	—	—	—
Pittsfield	22,870	—	—	—	—	—	—	—
Medford	21,956	6	—	—	16.67	—	—	—
Chicopee	21,692	7	4	28.60	—	28.60	—	—
Northampton	20,314	7	0	—	16.67	—	—	—
Beverly	15,807	5	2	—	—	—	—	—
Leominster	15,711	—	—	—	—	—	—	—
Clinton	15,094	4	0	—	—	—	—	—
Adams	14,745	—	—	—	—	—	—	—
Attleboro	14,561	—	—	—	—	—	—	—
Hyde Park	14,500	3	—	—	—	—	—	—
Newburyport	14,478	—	—	—	—	—	—	—
Woburn	14,315	3	3	33.33	—	—	—	—
Melrose	13,819	6	0	—	—	—	—	—
Westfield	13,809	3	1	66.67	—	—	—	—
Milford	13,771	—	—	—	—	—	—	—
Marlboro	13,609	1	0	—	100.00	—	—	—
Revere	13,609	2	—	—	—	—	—	—
Framingham	12,974	—	—	—	—	—	—	—
Peabody	12,406	—	—	—	—	—	—	—
Gardner	12,324	0	—	—	—	—	—	—
Southbridge	11,716	3	—	33.33	—	33.33	—	—
Watertown	11,575	1	0	—	—	—	—	—
Weymouth	11,350	4	2	—	—	—	—	—
Plymouth	11,139	2	1	—	—	—	—	—

Deaths reported, 3,166; under five years of age, 1,145; principal infectious diseases (smallpox, measles, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 1,026; acute lung diseases 381, consumption 364, scarlet fever 11, whooping cough 27, cerebrospinal meningitis 34, smallpox 1, erysipelas 5, puerperal fever 8, measles 26, typhoid fever 30, diarrheal diseases 468, diphtheria and croup 50.

From whooping cough, New York 8, Chicago 9, Philadelphia 5, Baltimore 2, Worcester, Fall River and Haverhill, 1 each. From scarlet fever, New York 4, Chicago 3, Philadelphia 1, Baltimore 1, Boston 1, Lawrence 1. From cerebrospinal meningitis, New York 22, Philadelphia 2, Baltimore 1, Providence 1, Boston 5, Holyoke, Haverhill and Everett, 1 each. From erysipelas, New York 3, Chicago 1, Philadelphia 1. From smallpox, Chicago 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,609,377, for the week ending June 24, 1905, the death-rate was 13.0. Deaths reported 3,877; acute diseases of the respiratory organs (London) 53, whooping cough 74, diphtheria 39, measles 127, smallpox —, scarlet fever 23.

The death-rate ranged from 6.7 in Wallasey to 24.2 in Oldham; London 11.7, West Ham 11.0, Brighton 10.2, Southampton 8.6, Plymouth 16.2, Bristol 10.5, Birmingham 13.7, Leicester 9.8, Nottingham 13.9, Birkenhead 13.0, Liverpool 16.8, Wigan 13.9, Bolton 15.8, Manchester 13.7, Salford 16.2, Halifax 13.0, Bradford 12.9, Leeds 12.2, Hull 16.8, Sheffield 15.5, Newcastle-on-Tyne 15.4, Cardiff 9.0, Rhondda 15.4, Merthyr Tydfil 14.8, Handsworth 6.8, Tynemouth 18.5.

METEOROLOGICAL RECORD.

For the week ending July 1, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

DATE	Barometer.	Thermometer.			Relative humidity.			Direction of wind.		Velocity of wind.		Weather*		Rainfall in inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A.M.	8.00 P.M.	Daily mean.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	
S. 25	29.78	72	83	61	57	56	56	W	W	7	16	C.	C.	0
M. 26	29.60	70	87	54	85	88	86	N W	N E	5	18	O.	O.	.35
T. 27	29.82	58	63	53	69	73	71	N	W	9	6	O.	F.	.10
W. 28	29.88	64	73	54	59	58	58	N W	N W	20	6	C.	C.	T.
T. 29	29.94	71	83	59	52	46	49	N W	N W	12	5	C.	C.	0
F. 30	30.08	67	78	61	46	61	54	E	S	4	9	C.	C.	0
S. 1	30.11	68	72	65	81	66	74	S W	S W	8	10	F.	F.	0
Sa	29.89		76	58			64							1.84

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. Sa Means for the week.

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING JULY 1, 1905.

W. M. CARTON, passed assistant surgeon. Ordered to the Naval Hospital, Washington, D. C., for duty.

J. F. MURPHY, assistant surgeon. Ordered to duty at the Marine Recruiting Station, Buffalo, N. Y.

H. SHAW, assistant surgeon. Ordered to the Naval Recruiting Station, Boston, Mass.

BOOKS AND PAMPHLETS RECEIVED.

Mouth-Breathing. By W. H. Fitzgerald, M.D. Hartford, Conn. 1905.

Advice to Gonorrheal Patients. By Ferd. C. Valentine, M.D. Reprint.

Zur Kritik der heutigen Skoliosenmessung. Von Dr. Oskar von Hovorka. Reprint.

Twenty-eighth Annual Report of the Managers of the Adams Nervine Asylum. 1905.

Personal Views on the Management of Typhoid Fever. By Edward C. Register, M.D. Reprint.

The Universal Method of Clinical Writing by Means of Clinography. By Prof. V. Pensuti. Reprint.

Some Aspects of the Serum Treatment of Diphtheria. By J. D. Rolleston, M.A., M.D. (Oxon.) Reprint.

The Office of the Spleen. An Essay in Comparative Physiology. By Edward T. Williams, M.D. Reprint.

The Alleged Destruction of Red Blood-Corpuscles in the Spleen. By Edward T. Williams, M.D. Reprint.

Psychiatry. A Text-Book for Students and Physicians. By Stewart Paton, M.D. Illustrated. Philadelphia and London: J. B. Lippincott Company. 1905.

Treatise on Orthopedic Surgery. By Edward H. Bradford, M.D., and Robert W. Lovett, M.D. Third edition. Illustrated. New York: William Wood & Co. 1905.

Eighteenth Annual Report of the Superintendent of the St. Lawrence State Hospital to the State Commission in Lunacy for the Year ending September 30, 1904. Albany, N. Y. 1905.

Department of the Interior. Bureau of Government Laboratories. A Review of the Identifications of the Species Described in Blanco's Flora de Filipinas. By Elmer D. Merrill. Manila. 1905.

A Manual of Acute Poisoning, giving Classification, Varieties and Individual Substances usually met with in Emergency Poisoning with Special Symptoms, Simple Tests, Chemical Antidotes, Physiologic Antagonists and Treatment. Together with Methods for Use in First Aid to the Injured. By John W. Wainwright, M.D. New York: E. R. Pelton. 1905.

Address.

SOME FACTS AND FANCIES ABOUT MIND AND BODY.*

BY CHARLES A. DREW, M.D., BRIDGEWATER, MASS.,
Medical Director State Asylum for Insane Criminals.

MR. PRESIDENT AND FELLOWS OF THE MASSACHUSETTS MEDICAL SOCIETY: "Electricity is not a form of energy, any more than water is a form of energy. Water may be a vehicle of energy when at a high level or in motion; so may electricity. Electricity cannot be manufactured, as heat can; it can only be moved from place to place, like water; and its energy must be in the form of motion or of strain. Electricity under strain constitutes 'charge'; electricity in locomotion constitutes a current and magnetism; electricity in vibration constitutes light. What electricity itself is we do not know, but it may, perhaps, be a form or aspect of matter. So have taught for thirty years the disciples of Clerk-Maxwell. Now we may go one step further and say matter is composed of electricity and nothing else."

The quotation I have read you from the pen of Sir Oliver Lodge, as it appeared in *Harper's Magazine* for August, 1904, must serve me as introduction and text, from which I reserve the right to wander wide, as do some theologians. I would refer you for a complete elucidation of the "Electronic Theory of Matter,"—which I shall only touch in its relation to my theme,— to Sir Oliver Lodge's unabridged thesis, in the *Scientific American Supplements*, Nos. 1428 to 1434, inclusive, and to "Modern Theory of Physical Phenomena," by Augustus Rigbi, as translated by Augustus Trowbridge, and published by the Macmillan Company in 1904.

As my subject deals largely with theories, I may quote you in partial justification that "theory originally fashions science out of facts, and is the indispensable precondition of every important scientific advancement."

Without further introduction or attempt to disarm you, I submit my story.

Some years ago a personal friend, a physician of the best type, and one of the senior members of this Society, talked to me of some daydreams of his early manhood. At a certain age he supposed there must be men living wise enough to explain all the mysteries of life and mind. The phenomena of mind seemed included in those of life, but conscious life, or self-consciousness, seemed an additional problem, and a superadded mystery. He could not then see how these problems could be solved by the laws of molecular physics; and after many years of study, with mind keenly alert and open to the evidence from chemical and physiological laboratories, the mystery to him continues supremely interesting, but as much a mystery as in the days of his early boyhood.

As a boy, he looked for some great preacher or philosopher to explain these mysteries. As he left his rural home, the village preacher and the academy teachers to sit at the feet of college professors, his expectation was keen and his faith ascendant. His acute interest in the problems of nature drew him to physiology and chemistry, while a natural bent and sympathy for humanity led him into the ranks of medicine. In the pride of his knowledge as a college senior there lurked a sense of disappointment, not because he had slighted opportunities, rather because of a dawning suspicion that behind the veil of phenomena were laws and realities the ultimate nature of which he might never know. As he began his medical studies, smoldering expectation was fanned to a glow, hope rose high again; gross anatomy and the physiology of organs were interesting, but in microscopic anatomy and cell biology, especially as applied to those cells of the central nervous system, lay hidden the veritable elements of the soul. If the riddles of life were not solved, it was held to be due to imperfections of the microscope or to faulty technique; but this was more than forty years ago. The science of physiological psychology was then young and overconfident. It pointed with pride to the revelations of its inductive and experimental methods, and, in the assurance of its lusty youth, laughed its older rival, metaphysical psychology, to scorn. Maudsley's thesis on "Body and Mind" had not then been written, but Herbert Spencer's "First Principles" was being widely read, and Charles Darwin's "Origin of Species" had been published several years. The influence of this masterpiece of a master mind was even then shaking the foundations of many cherished beliefs concerning things of earth and heaven. Doubt and apprehension were the first reactions for many conservative minds. Gleesome aggressiveness marked the attitude of others who thought they saw in the theory of evolution the beginning of the end of man's faith and hope in the soul's immortality. "The brain secretes thought and consciousness as the liver secretes bile," and "Without phosphorus no thought," were pithy epigrams which served as a rallying cry in the rebellion of the nineteenth century against the older philosophy in favor of a strictly material interpretation of the phenomena of conscious mental life.

It would not be quite true to say that these catch phrases have no potency to-day, but the fallacies they embody have been many times uncovered.

"With phosphorus you light your candle, and with phosphorus you discover Neptune and write the Fifth Symphony; how charmingly simple and convincing," wrote John Fiske[1], with thinly veiled irony. "And yet was anything save a bit of rhetoric really gained by singling out phosphorus among the chemical constituents of brain tissue rather than nitrogen or carbon?" "The phosphorus philosophers have often compared thought to a secretion," writes William James.[2] "'The brain secretes thought as the kidneys secrete urine or the liver secretes bile,'"

*The Annual Discourse delivered before The Massachusetts Medical Society, June 14, 1905.

are phrases one sometimes hears. The lame analogy need hardly be pointed out. The materials which the brain pours into the blood (cholesterin, creatin, xanthin, or whatever they may be) are the analogues of the bile and urine, being in fact real material excreta. But we know nothing connected with kidney and liver activity which can be in the remotest degree compared with the stream of thought which accompanies the brain's material secretions."

These opinions from the writings of two of the New World's profoundest scholars were written in the dawn of the twentieth century.

In a recent paper on the treatment of paresis, Dr. Edward Cowles[3] writes: "We are learning that inasmuch as psychology can tell us nothing to explain the normal mechanism of mental activities, we cannot expect to see through the microscope an explanation of diseased thoughts and feelings."

We must not conclude from this that Dr. Cowles was unmindful of the alleged way in which, according to the laws of cerebral association, neural undulations transform themselves into sensations, sensations add themselves together to form feelings, and feelings unite themselves to form ideas, and ideas congregate to form abstract reasoning, etc.; rather we understand the doctor's meaning to be that physiological psychology and anatomical pathology do not adequately explain. His hope apparently turns to the deeper underlying plane of physiological chemistry, and he quotes Dr. Otto Folin approvingly as follows: "Microscopically visible structural changes in any tissue or in the cells of any tissue must be preceded by more or less pronounced metabolic changes. Metabolic changes are chemical changes. Chemical changes are the physical exchanges and transmutations that take place in the physical units of matter, the molecules; and the molecules are beyond the ken of the microscopists."

These quotations of a comparatively recent date, from men well informed in that medical specialty most concerned with the phenomena of mind, neither affirm nor deny the material nature of our conscious mental life. They do point to a growing recognition of the limitations of science to unravel mysteries which seem to defy the microscope and, it may be, chemical reagents. They do mark by sharp contrast the modest claims of the older science of to-day from the cock-sure attitude of the youthful science of forty years ago.

It seems — if we may paraphrase a famous saying of Bacon — that a superficial knowledge inclines men's minds to make a fetich of science, while a deeper knowledge reveals the limitations and points to the truth that science deals with the causal relation of phenomena, and that physical science takes account only of physical phenomena and their related sequences and is utterly incompetent to pass judgment about things non-material or beyond the limits of man's experience in the body. I have so presumed on the instinctive interest in humanity and its destiny, underneath the scientific finish of members of this Society, as to ask your attention to two modern theories which seem most worthy concerning the relation of the minds and bodies of of men.

First, I would call attention to some features of the brain productive or "liver-bile" function theory of the ultramaterial psychologists, and, secondly, to some phases of the transmissive brain function theory of Schiller[4] and William James.[5]

I do not know that the liver-bile, brain-thought theory is more commonly held by members of our profession, yet the conclusion easily follows the observation of the coincident development of brain and mind, the lapse of consciousness from pressure on or injury to brain tissue, and the greater intelligence of men and animals having the deepest cerebral sulci and the most complex arrangement of cortical gray matter. I doubt if the case of the physiologist has been more strongly put than in the words of Sir Frederick Harrison,[6] who wrote, in defending the so-called "positive philosophy," more than thirty years ago: "Man is one, however compound. Fire his conscience and he blushes. Check his circulation and he thinks wildly or thinks not at all. Impair his secretions and his moral sense is dulled, discolored, or depraved; his aspirations flag, his hope, love, faith reel. Impair them still more and he becomes a brute. A few drinks degrade his moral nature to that of a swine. Again, a violent emotion of pity or horror makes him vomit. A lancet will restore him from delirium to clear thought. Excess of thought will waste his sinews. Excess of muscular exercise will deaden thought. An emotion will double the strength of his muscles. And, at last, the prick of a needle or a grain of mineral will in an instant lay to rest forever his body and its unity, and all the spontaneous activities of intelligence, feeling and action with which that compound organism was charged."

With a mind tuned to recognize the significance and interdependence of that aggregate of phenomena we call mind and that aggregate of phenomena we call body, we turn eagerly to chemistry, physics and physiology for the justification of our expectations.

This domain of molecular physics populated by hypothetical molecules, divided into hypothetical atoms and subdivided into hypothetical electrons, might well put to shame the fairy dreamland of imaginative childhood.

Chemistry tells us that matter is indestructible. The proof is so conclusive that no scientist has a doubt. As one form of matter is transformed into another, perchance a solid into a liquid or into invisible gases by disturbing molecular relations, so it seems established that the many so-called forces are transmutable one into another. Force being manifested only in motion of matter it would be easy to conclude that no force existed where there was no visible motion. But molecular motion, like some forms of matter, may not be visible and the correlation and equivalence

of forces or "the conservation of energy," so-called, represents a doctrine seemingly as impregnable as the axiom of the indestructibility of matter. In searching for a material explanation of the phenomena of life and consciousness we naturally inquire concerning the physical and chemical properties of living matter and matter that has never lived. Again we are told that, so far as the chemist and physicist have knowledge, the distinction is not fundamental, for inorganic bodies and living organisms have very similar chemical elements.

Verworn [7] declares that "the life process consists in the metabolism of proteids," yet carbon, hydrogen, nitrogen, sulphur and oxygen, — elements so conspicuous in inorganic nature, — make up the complex proteid molecule.

While it seems to be established, therefore, that "the vital phenomena of organisms should follow the same general chemical laws as the phenomena of the inorganic world," we should not miss the significance of that supremely important fact that proteids "are never wanting in living substances and are never found in the inorganic world." [8] Hence it is that in the complexity of that proteid molecule seems to lie hidden a key to the mystery of life. And yet, that molecule is not uniform, we are told by competent chemists. While its elements are but five or six, its atoms vary in position and often number far beyond a thousand, [9] — and the key is not readily found. According to Pflüger, [10] "living proteid does not need to have a constant molecular weight; it is a huge molecule undergoing constant, never-ending formation and constant decomposition, and probably behaves toward the usual chemical molecules as the sun behaves toward small meteors."

Then we would further inquire as to the difference, if there be a chemical difference, between the living and the dead proteid molecule. Here, we are told, there is a fundamental difference, as evidenced by a comparison of the decomposition products of living proteid and those obtained by the artificial oxidation of dead proteid. While the non-nitrogenous, or hydro-carbon, decomposition products of the two are essentially the same, the difference in the nitrogenous products of living and dead proteid is marked and important.

It seems, if we may trust Pflüger and Verworn, [11] that in the decomposition products of living proteid may be found that exceedingly poisonous gas cyanogen, which unites with hydrogen to form the deadly hydrocyanic acid and with oxygen and metallic bases to form the highly explosive fulminates. Cyanogen, it seems, is formed by the union of a single atom each of carbon and nitrogen. It acts as a radical in chemical compositions, and is noted among chemists for the intensity of its internal energy.

All chemists may not agree with Verworn and Pflüger [12] that living proteid is distinguished from dead proteid most of all by the vivifying presence of that fiercely energetic radical cyanogen; yet if it be established beyond peradventure, it is a curious fact that a radical so closely related to the deadly prussic acid and the explosive fulminates should be the essential chemical representative of life.

If we agree with that axiom of physics that every manifestation of force is a mode of motion, molecular or molar, and consent to that other dictum of science that each mode of motion persists until transformed into some other mode of motion, then we are ready to inquire what becomes of the neural currents passing almost continuously from periphery to center through nerves of special sense. If you hold that these currents are dancing molecules of matter, each unit imparting its motion to the molecule next nearer the center, as physicists have taught, or agree that the phenomena is better explained by the conception of free electrons chasing one another from molecule to molecule of nerve tissue, — as physicists may teach, — then, it is pertinent to inquire, Is this motion transformed into feeling and thought, or is it transmitted along centrifugal neural transit lines to appear in molar motion, as in the voluntary movement of an arm, or in altered or augmented secretion or other forms of molecular motion? Or, may it be that part of the afferent motion is absorbed in feeling and thought and part directly transmitted along afferent neural lines?

We are told that the last hypothesis was indorsed by Herbert Spencer in the first edition of his "First Principles," but later in life his views changed, and attention was called to the change in the preface of the last edition of that work; his later conclusion being that thought and feeling were outside the neural transit circuit and could not be equivalent to, although concomitant with, the molecular motion of matter. He had come to believe with du Bois-Raymond [13] that, "if we possessed the same knowledge of atoms that we have of the motions of the heavenly bodies we would understand all the phenomena of the physical world, but we would not understand how consciousness arises, nor how the simplest psychical phenomenon comes to be." "It would be," as du Bois-Raymond expresses it, "of unbounded interest, if, with our mental eye turned inward, we could observe the cerebral mechanics of an arithmetical problem; or if we could know what dance of the atoms of carbon, hydrogen, nitrogen, oxygen and phosphorus corresponds to the delight of musical sensation, what whirl of such atoms to the acme of sense enjoyment, and what molecular storm to the frantic pain from maltreatment of the nervus trigeminus." "But however carefully we might follow the motions of individual atoms in the brain we could see only motion, collisions and again motion."

And so it is that we are returned by material paths to seemingly soundless depths where lie hidden the mysteries of energy and consciousness.

According to Mr. Percival Lowell, [14] "the neural current of molecular change passing up the nerves and through the ganglia reaches at last the cortical cells, there to find a set of molecules

less accustomed to this special change. The current encounters resistance, and in overcoming this resistance it causes the cells to glow. The white heating of the cells we call consciousness. Consciousness, in short, is probably nerve glow." This, of course, is the mechanical point of view delightfully simple and easily grasped. But admitting that the cortical cells do glow, what and where is the percipient? Do the cortical cells cognize their own glowing? The molecules of a wire glow literally if the wire is not sufficiently large for the free passage of an electric current; yet one would hardly suppose the wire to be conscious because the vibrations of its molecules are timed to produce the kind of ether waves we recognize as light.

The terms "cerebricity" and "neuricity," which have crept into our medical literature, descriptive of the energy supposed to be stored in the cortical cells of the cerebrum and minor nervous ganglia, were born out of wedlock most likely, but they stand for a new idea, and the minds of men run after new ideas in science, as in theology, "even as sparks fly upward."

It seems as if the tendency has been towards reducing all the material sciences to problems in molecular physics and of late certain electro-physicists are claiming the earth with all creatures of the land and sea,— and not these alone,— "the golden sun, the planets, all the infinite hosts of heaven," if we may use the poet's phrase, are counted subjects and creatures of electricity.

In passing to a consideration of the transmissive brain-function theory, it is embarrassing to remember the contempt which the so-called "deterministic" psychologists and some who are wedded to the liver-bile, brain-thought idea, hold for any hypothesis which admits the possibility of a non-material intelligent reality that may exist apart from a nervous organization. In the face of such problems, however, as the essence of matter and energy and the origin of life, sensation and consciousness, pride of opinion seems hardly worth while.

Some of us have failed to understand how a nerve cell or a nerve fiber can think, hope, fear, love or aspire, in spite of all we have been taught of the brain's wonderful mechanism, and it is quite as difficult to understand how many nerve cells and nerve fibers acting in unison and helping one another can produce a sensation, even, unless we assume some sort of a percipient that can interpret the molecular vibrations and atomic motions which seem to constitute the physical part of feeling and thought.

It is somewhat comforting to learn that men of such scientific attainments as Virchow, Helmholtz, du Bois-Raymond, William James and John Fiske, in the full maturity of their magnificent intellects, have, likewise, been unable to understand, from such an hypothesis, how feeling and thought come to be. It does seem to be true, as Schiller [15] and James [16] have pointed out, that we have quite as good reason for thinking of the function of the brain as a transmissive function as to think of it as producing thought and consciousness as the liver produces bile. As the keys of an organ open successively the pipes and let the wind in the air chest escape in various ways; or as the prism transmits, bends, distorts, or separates into the colors of the spectrum the white light of nature, so the brain is conceived to transmit in part, bend, distort, and separate, according to its integrity and plane of development, the infinite intelligence of an Eternal Omniscience. As Professor Schiller puts it, "Matter is an admirably calculated machinery for regulating, limiting and restraining the consciousness which it encases. If the material encasement be heavy and simple, as in the lower organisms, it permits only a little intelligence to permeate through it. . . . If a man loses consciousness as soon as the brain is injured, it is clearly as good an explanation to say the injury to the brain destroyed the mechanism by which the manifestation of consciousness was made possible, as to say it destroyed the seat of consciousness."

The brain-productive function and the brain-transmissive-function theories both agree that the phenomena of mind are conditioned by the action of some kind of energy upon cells of living nervous matter; but whether this energy is a minute part of that universal energy which keeps the planets and stars true to their courses, or a special kind of "vital force" belonging alone to living organisms, science does not yet permit us to say.

The production theory assumes that the relationship of conscious intelligence to the brain may be likened to music and the harp. When the harp is broken there can be no music forevermore. The transmission theory may also liken the brain to the harp, and those outward phenomena of mind of which voice, gesture and smile are parts, to those vibrations of ether we recognize as pleasing harmony or unpleasant discord. But the transmission theory takes further notice of the harper, without whom there can be no music, and the harper is likened to the mind or conscious intelligence, whose instrument is the whole human organism, more especially the brain.

We do not suppose such reflections come within the domain of science; certainly not within the scope of any but of the concrete sciences. If every proposition be entirely true, science could not demonstrate the truth, because the conditions are outside the sphere of man's physical experience, and "science is but the codification of experience and is helpless without the data which experience furnishes." [17]

Must we then apologize for asking your attention at this hour to groups of ideas not strictly relevant to the problems of any concrete physical science? Man seems to be the only animal capable of abstract reasoning, and it may be that the "Absolute Mind" intended man should use his peculiar talent for the gratification of an instinctive interest in his own destiny in time, and after time, for him, has ceased to be.

We have purposely avoided introducing such evidence of the existence of a non-material in-

telligence as the reports of the societies for psychical research offer in abundance, and have refrained from quoting from such writings as Hudson's "Laws of Psychic Phenomena" and "The Scientific Demonstration of a Future Life," although we have no reason to suppose the investigations of the "psychical researchers" were not carried through in a scientific spirit. We would consent to Hudson's proposition that "a mental state is as much a fact as a mountain," but the field is too broad and the details too lengthy to be of service now. If any fellow would examine this line of evidence, we would refer him to Frederick Myer's "Human Personality," published by Longmans, Green & Co. of New York.

Some members of this Society were studying psychology in a practical way before the reader had learned even the names of the cranial nerves. At the bedside of suffering mothers you have helped into the world tiny beings with no self-consciousness and for whom world-consciousness was yet but dawning. The manifestations of love and aversion, hope and fear, joy and sorrow, anticipations, aspirations and alternating states of consciousness and unconsciousness are very familiar phenomena to you. If you have not measured, in time, different cerebral reactions nor constructed theorems, or classified, as have the professional psychologists, yet, more directly, you may have reached conclusions as substantial as theirs.

Attraction plus repulsion of material molecules may solve the riddle of life to your satisfaction. You may believe that thought and feeling are as much modes of motion as are heat, light or electricity. You may hold that "to know and to feel and to will" are but varying kinds or degrees of excitement of a nervous organism — nothing more and nothing less. If you are forced from this position by the demonstrations of science that every unit of afferent energy and every bit of centripetal motion can be accounted for by an equivalent quantity of other forms of efferent motion, molecular or sensible, without including conscious intelligence in the circuit at all — then you may fall back with Ernst Hæckel to the obscure if less vulnerable position, that the germs of mind are and have been inherent attributes of matter from before the time when this earth — a gaseous cloud of nebulous matter — was a newborn child of the sun.

On the other hand, giving due weight to the unvarying concomitance, within the limits of our experience, of the phenomena of mind with neural undulations and molecular activity of the body, you may yet hold that the relation, so far as science can reveal, is but a concomitance or induction of material motion by an unknown energy.

If we allow our minds a wide range and notice with F. C. Schiller, William James and John Fiske, all the testimony the concrete sciences have to offer, which our intelligence will accept as pertinent, then I venture the opinion that many of us will be forced to conclude that the transmission of the relation of psychic phenomena to the brain is the theory most consistent with all the facts and most worthy the credence of scientific men.

But whatever conclusions we reach, the imperfections of science limit us to a conclusion based on moral probability. We assume that members of this Society are not yet ready to accept the credentials of a moral and mental science. "Nevertheless," in the language of Sir Oliver Lodge,[18] "many of us are impressed with the conviction that everything in the universe may become intelligible if we go the right way to work." And so it is that every new discovery or theory in molecular physics, or in any science that may be reduced to electro-physics, may appeal, not alone to our professional interests, but to the very instincts that are the heritage of our common humanity.

For many years men of science have accepted the hypothesis of an immaterial cosmic ether pervading all interstellar as well as all intermolecular space. Science has insisted on the right to this assumption, in order to frame a partial explanation of such a common phenomenon as light.

For many years the unscientific world has accepted the hypothesis of an immaterial entity called spirit or soul. Ordinary sense has insisted on the right to this assumption in order to explain certain phenomena common to conscious mental life.

Some men have doubted the existence of an imponderable entity like cosmic ether which cannot be seen, heard, felt, tasted, or detected by the reagents of the chemist, yet these doubters have offered no explanation of common physical phenomena, independent of this hypothesis, that would be accepted by science or common sense.

Forty years ago it was an easy thing for newly fledged scientists to explain the phenomena of conscious intelligence to their own satisfaction, without the hypothesis of soul or spirit. To-day it is safe to say a majority of those well versed in science will agree with Sir Oliver Lodge that "Testimony is borne to inner personal experience on which physical science does well to be silent." But physical science has made wonderful strides in the past decade, and we must admit that molecular and electro-physics have carried off most of the honors. Roentgen's epoch-making discovery in 1895 put the student mind on the *qui vive*, and since the discoveries of Becquerel in 1896 and the Curies in 1898, radio-activity has easily held the center of the scientific field.

The mental processes and verifying experiments by which the cathode rays and the resulting "x-ray" phenomena and the emanations of radio-active bodies have been traced back to elementary electric units, of opposite signs, are complex enough and may not be of practical importance to physicians. But to follow these experiments gives us a peep at some of Nature's guarded secrets and may be worth while. Some of us have thought of Nature in a general way as a composite of matter and spirit. We may have loosely thought of electricity as a substitute

for the spirit element of the composite. At least we have often heard it claimed that vital processes are electric processes and neural currents are electric currents. If we accept the electronic theory, we must now think of ponderable matter as a form of electricity, while the essential nature of vitality and mind is as obscure as ever. The more we think of it the more this idea seems to harmonize with our observation of electric phenomena.

Whenever man has attempted to apply electricity to the wheels of industry his success has been signal; whenever he has attempted to apply electricity to the destruction of abnormal and parasitic life, his success has, at least, been partial; but whenever he has attempted to reinforce by electric energy, so-called, that energy we think of as vital, we can almost as truly say that his failure has been signal.

We do not forget that a flagging heart may be stung into temporary activity by a Faradic shock, a sensitive nerve vibrating pain may be soothed by galvanism and metabolism, may be influenced indirectly by static and high-frequency currents. But admitting this, other agents may serve as well to whip up a flagging heart, and the forceful impaction of hot and cold water may, indirectly, influence metabolism and modify nerve currents quite as surely. Indeed, it seems as if the wonderful fruits of recent scientific investigation had not added greatly to the physician's armamentarium. The more light we get the more it seems to be true that nature was kind enough to furnish man her richest healing agents — water, fresh air and sunshine — before he had learned the alphabet of science.

May we requote: "Electricity is not a form of energy any more than water is a form of energy. Water may be a vehicle of energy when at a high level or in motion; so may electricity."

Again it seems as if Nature had hidden from man and denied to his control life-destroying agents, among which electricity in motion may be counted, until he has reached, at least, the second grade in the school of science.

The phenomena of the x-ray are now fairly familiar to most of us. So familiar indeed that hardly a thrill of awe is felt as we look through flesh and blood to confirm or disprove a diagnosis about organs deeply covered and beyond the reach of any hitherto known light.

By the aid of that cleverly designed mechanism, the spinthariscope, we have watched the emanations of a minute particle of a radium compound, less than a hundredth of a grain, perhaps, and yet its seemingly exhaustless energy, its diamond-like brilliancy and the measure of its rhythmical scintillations made it seem as if we were looking at a microscopic reproduction of the great dog-star Sirius, — most conspicuous among "fixed stars" that glorify a winter's night. Our interest in the phenomena of this microscopic portion of nature is not alone because of its visual similitude to the grandest phenomena of the inorganic universe, but more to the significance of the testimony it bears to new truths concerning Nature of which we had not dreamed.

If it be true that radium, uranium and thorium are as surely elements as are bromine, lead and gold, and if it be further true, as seems proven, that these elements are being spontaneously transmuted into helium and other elements not yet identified,[19] then the whole theory of the indivisible atom and the unchangeable element, upon which so many scientific edifices have been builded, must, perforce, be discarded as misleading and outgrown.

If it be proved beyond question that matter may be reduced to electric monads, corpuscles, or electrons, each having a "mass" or "weight" one eight-hundredth and a bulk one hundred-thousandth that of an atom of hydrogen, and if we must think of the hydrogen atom as an aggregation of perhaps eight hundred electrons and the nitrogen atom with fourteen times as many, and the iron atom with fifty-six times as many, and each element with such a multiple of eight hundred electrons as corresponds with its atomic weight,[20] then, indeed, does the essential nature of electricity become a question of fascinating interest.

If we accept the theory that radio-activity is due to the explosion of atoms through the fierce energy of electrons within and think of these electric monads as mostly negatively charged, "flying about, each of them repelling every other, but all attracted and kept in their orbits by the mass of positive electricity in which they are embedded," imprisoned within the limits of a material atom, then we may better understand how the degree of radio-activity and atomic weight of a substance will be relatively small or large according to the number of electrons of which its individual atoms are composed.

If it prove true that radio-activity of elements and their compounds vary with the atomic weight — and atomic weight is determined by the number of electrons per atom — then we might, *a priori*, except animal organisms to be radio-active in a degree corresponding to those radio-active elements which enter into its composition. Experiments seem to show that certain animals are radio-active, but here the intensity of the radio-activity seems to vary with the vital activity of the animal, for we are informed by Lommasina[21] that the intensity of the radiation, or emission, is greater in grown birds than in young ones and greater in moving individuals than in those at rest.

And so it is that "bioradio-activity" calls for our attention. The call is low and uncertain, as yet, but it is a call to which our professional ears are better attuned. When nerve fiber and brain cells are found to register on calcium phosphide screens or specially prepared photographic plates[22] activities to which the human ear is deaf and to which the eye has hitherto been blind — then we may feel to say to the enthusiastic physicist, "this throws new light on physiology and is really worth while."

If members of this Society were to select a single name representative of American intellect

and scholarship from among the dead who live in our memory, to be written on the roll of fame with the best names of the old world, I fancy Oliver Wendell Holmes and John Fiske would each have some of your votes. Not a few of you knew the bright and genial "Autocrat" personally. Some of us who never looked upon his face loved him hardly less and almost envy you who were privileged to know him well. While the ripple of his graceful poetry and prose may hide the steady current of his scientific thinking, you know how few there were better conversant than he with the worth and the limitations of science. You know, too, how suggestive are some of his pages of a prescience of realities outside the boundaries of science proper — as if his soul had caught wireless messages concerning realities beyond the range of our imperfect organs of sense.

If the poetic temperament of Dr. Holmes would rank him among those kindred spirits whom Dr. Osler,[23] with apt metaphor, has called "the Teresians," those who see visions and dream dreams and walk not alone by sight — John Fiske truly must be classed with a different temperamental group. Not to the Laodiceans, surely, for we cannot conceive of the Cambridge philosopher as satisfied to "get and to beget," merely, nor could we think of his being lukewarm about any questions pertinent to "The Destiny of Man." His was pre-eminently the judicial type of mind. For many years in close touch with the best intellects of your own University at Cambridge, and not these alone, a graduate of the department of law; well balanced by nature, thoroughly trained in the laws of evidence, he applied himself diligently to collecting and correlating evidence, not alone of historical and political facts, but of facts from each of the physical sciences which, woven together, vastly enlarge our conception of that universe of which we are part.

If, then, we may further use the figure of Dr. Osler, John Fiske was a "Gallionion" by temperament and a scientist and historian by training. He accepted without reserve the essentials of the scheme of evolution as outlined by Darwin and elaborated by Spencer and others. His interest was intensely alert to the findings of science in the search for physical realities. He would have agreed with Lord Balfour[24] that "sense perceptions supply the premises from which we draw all our knowledge of the physical world. What we see depends not merely upon what is to be seen, but on our eyes. What we hear depends not merely on what there is to hear, but on our ears. Now eyes and ears have, as we know, been evolved in us and our brute progenitors by the slow operation of natural selection. And what is true of sense perception is, of course, also true of the intellectual powers which enable us to erect upon the frail and narrow platform which sense-perception provides the proud fabric of the sciences."

We dare to say that John Fiske would have indorsed the teaching of Lord Balfour because many of the truths forced home by the eloquent Chancellor of the University of Edinburgh had in different words and at different times been given to the world by the clear-headed teacher at Cambridge, Mass.

Lord Balfour's magnificent address to the British Association for the Advancement of Science at once fires our imagination and deepens our reverence. It cannot be otherwise. We catch the ring of scientific truth. We know the Premier's standing in the scientific world. We know by reputation the men whose experimental researches furnish his evidence. In the light of his marshalled facts we see, with the mind's eye, an all-pervading, space-filling ether which is not atmosphere or a gas, nor does it possess any of the properties of ordinary matter. Seemingly as intangible as the "mind stuff" of the older metaphysicians, we see this hypothetical matrix give birth to and support countless millions of electric monads which group into atoms of matter. Again we see, mentally, these numberless atoms "concentrated into nebulæ, into suns, and all the hosts of heaven." We see "how at least in one small planet they combined to form organic compounds; how organic compounds became living things; how living things, developing along many different lines, gave birth at last to one superior race; how from this race arose, after many ages, a learned handful, who looked round on the world which thus brought them into being, and judged it and knew it for what it was."

This is a partial epitome of the story of evolution so far as science has cut the leaves. Under the spell of Lord Balfour's eloquence it almost seems as if the whole story was told. Out of something nonmaterial, in the ordinary sense, science now postulates the creation of all material things. Emphasis is deservingly laid on the fact that our organs of sense, so well adapted to the lower planes of evolution, may limit as well as disclose realities which are and may forever be. Arthur Balfour does not claim even to outline the whole story. Indeed, he outlines what science does teach to make clearer, what true science doer not claim to explain. "One thing, at least, will remain, of which this long-drawn sequence of cause and effect gives no satisfying explanation," continues Lord Balfour, "and that is knowledge itself." Even as science must postulate an all-pervading entity called cosmic-ether to explain the most familiar phenomena of Nature; so must philosophy postulate a cognizing percipient called mind, without which all this molecular and intermolecular motion, which is the physical representation of life, could not be understood nor yet perceived. In the light of all the known facts does it seem incredible to you that Mind should be the objective towards which all the processes of evolution in Nature have been working through past eons? Does it seem a thing incredible that these organs of sense, even now less acute than those of animals on a lower evolutionary plane, should, in the further evolution of mentality, become less and less necessary to human personality?

I do not forget that my hearers are busy men, chiefly concerned in the science and art of medicine. These facts and fancies are somewhat foreign to our every-day work. And yet we know that underneath the professional current of many a busy physician's life are quiet depths where the testimony of Nature in all her phases are ever welcome. This has been my hope, and, if needful, this must be my apology. It has been my effort not to bring you a new or strange message, rather to gather from scientific fields and speculative by-ways such flowers of fact and fancy as seem most true and beautiful and most suggestive, when woven together, of the sublimity of Nature and the glory of that Eternal energy, which, in the language of John Fiske, "manifests itself to our consciousness, in harmonious activity throughout the length and breadth and depth of the universe, which guides the stars for countless ages in paths that never err, and which animates the molecules of the dewdrop that gleams for a brief hour on the shaven lawn, whose workings are so resistless that we have naught to do but reverently obey them, yet so infallible that we place our trust in them yesterday, to-day and forever."

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Original Articles.

REPORT OF RESULTS IN NONTRAUMATIC SURGERY OF THE BRAIN AND SPINAL CORD.*

OBSERVATIONS UPON THE ACTUAL RESULTS OF CEREBRAL SURGERY AT THE MASSACHUSETTS GENERAL HOSPITAL.

BY E. A. CODMAN, M.D.

I WANT to take this opportunity to thank the surgeons of the Massachusetts General Hospital for their kindness in allowing me to report these cases. I think that we all ought to appreciate the good will of the surgeons of the Boston City Hospital and the Massachusetts General Hospital in allowing us during the last two years to make use of their cases for discussion at these meetings. I fully realize, and I know that you, gentlemen of the society, also do, the great obligation we are under for the use of this material *used in the way in which we have used it* at these meetings. We have dragged up and brought to light the results of some very unsatisfactory classes of cases, and it is obvious that the statistics which have been shown at these meetings are somewhat less satisfactory than those which are reported by individual operators in other places.

However, during the last two years we have had ten good meetings on the present policy of presenting actual homemade results and of discussing the directions which improvements may take. Another thing which has developed from this search for results has been the construction of a system of tracing patients after their discharge from the hospital. Each of the younger men who has been kind enough to undertake to trace the results of these cases has contributed a little to the convenience of this system. As perhaps they may be of future service to others, I will mention the points which at present we find useful.

(1) To write to the friends of the patients at the address given on the entrance books of the hospitals.

(2) To write to the physician recommending the patients for admission.

(3) If we suspect that the patients are dead, their names may possibly be found in the State Archives, Room 432 at the State House. The cause of death is frequently given.

(4) The authorities in Room 36 at the State House have been most kind in giving information about the patients who have later gone to some of the public institutions.

(5) The town clerk at the place where the patient lived is often able to forward a letter to some relative.

(6) The police are always obliging in assisting to discover the present residence of the patients.

(7) Directories of many of the smaller towns and all of the larger cities are kept on file at the Dennison Manufacturing Company, 26 Franklin Street, or at the State House.

(8) People of the same name found in the directory in the town in which the patient resided may be written to to find out whether they have any knowledge of the case.

(9) In case the patient has moved his lodgings, the people in the neighborhood often know what his new address is, even if it has not been left with the postman.

(10) Occasionally the house officer who had charge of the case and whose name is found on the first page of the Record Book, will be able to tell of the result after the patient left the hospital.

These methods have all been used in tracing the present results, and we have been able to find the results in all of the cases operated on for epilepsy

*The following papers were read at a meeting of the Section for Surgery of the Suffolk District Branch of The Massachusetts Medical Society in conjunction with the Boston Medical Library, April 5, 1905.

and abscesses and all but five of those operated on for brain tumor. The gross facts are down on the table before you. These are not statistics, they are results of our own surgeons cases of which we have records.

CLASSIFICATION ACCORDING TO THE INTENTION OF THE SURGEON BEFORE OPERATION.

Operations were undertaken,	No. of Cases.	Deaths within 2 wks.	No Improvement.	Improvement.	Not traced
1, for the removal of a tumor if possible; if not, to relieve symptoms caused by pressure (notably headache and failure of eyesight)	28	7	11	7	3
2, purely to relieve pressure symptoms (headache and failure of eyesight)	8	4	0	2	2
3, for the relief of epilepsy (usually post-traumatic)	21	0	12	9	0
4, for drainage of a cerebral abscess . .	6	5	0	1	0

From my reading of the records I want to take a few minutes to speak of the points which have seemed to be most instructive.

First, in regard to brain tumors. Obviously there is a large mortality and a very large percentage of "not improved." During the last few years there have been suggested certain factors which may be expected to improve the results in these cases.

(1) *Diagnosis.* — It is not in my portion of this discussion to speak especially of diagnosis. The only point which I thought might be of interest was the use of iodide of potassium as a diagnostic measure. In this series of cases at least eight of those in which the operation failed were delayed from several weeks to many months by this practice.

(2) *The permission for autopsy.* — If we are to learn to do brain surgery for the community, the community must consent to the practice of post-mortem examinations. In some of the cases the lack of a post-mortem has been most annoying. I hope some day that no patient will be admitted to a hospital without signing a permission for post-mortem examination in case it is necessary.

(3) *The prevention of shock and hemorrhage.* — In three of this series death was due to shock and hemorrhage. In many other cases which were not at once fatal, mention is made in the records of the difficulty experienced with bleeding and of the extremely poor condition of the patient at the end of the operation. To combat this difficulty, Cushing has suggested the use of the pneumatic rubber tourniquet, and Frazier has suggested the use of a dental engine which minimizes the time required to cut out the Wagner flap.

(4) *Prevention of sepsis.* — Five cases died from sepsis. Of these three died after a second operation. The custom of doing the operation in two stages is undoubtedly likely to cause sepsis, but its unquestioned value should demand redoubled care in technique. Probably the most common cause of sepsis after these operations is due to the tension caused by protrusion of the brain which produces a pressure necrosis on the stitches and gaping of the interval between the stitches. For this reason, especial care should be taken to approximate the edges of the scalp wound.

(5) *Prevention of post-operative paralysis and disturbance of speech.* — Of eleven cases in which there was no improvement, eight had an increase of paralysis or aphasia develop after the operation. All of these had hernia cerebri. In all the opening was made in the Rolandic area. Cushing has made a most valuable suggestion in relation to the prevention of hernia cerebri. In cases where the operation is purely for the relief of pressure, he proposes trephining over a "silent" area of the cortex so as to avoid the strangulation of the important motor area by the constriction of the hernia cerebri in the bony gap. On the analogy of the intermuscular operation for appendicitis, he recommends an intermuscular incision through the temporal muscle and the removal of the squamous portion of the temporal bone on each side.

This brings me to the most important observation to be made from the analysis of these cases. Should we not, instead of aiming to do a radical operation in cases of tumor of the brain, be satisfied with a purely palliative operation?

In the first place, observations at autopsy, as I think Dr. Walton will be able to show, reveal the fact that of all brain tumors, a very small percentage are really removable and that of those that are really removable the greater number arise from the dura.

Second, the cases at the Massachusetts General Hospital show that even those that are really removable, as shown by autopsy, are most difficult cases to handle, and that in the hands of these surgeons not one of the 28 cases has been successful as a radical operation.

Third, that of all those cases which have lived through the ordeal of the operation, a considerable percentage was improved only by the relief of pressure, and that in those cases which were not improved, the failure was probably largely due to the strangulation of the motor cortex through the trephine hole, or to damage done to the brain tissue.

In 28 of the 36 operations the attempt at a radical removal of the tumor was made, and in only the eight worst cases was it decided to do only a palliative operation. I think that we may almost say that it is certain that if in no case the attempt at radical removal had been made and, instead, a simple operation for the relief of pressure had been done through an intermuscular incision over a "silent" portion of the cortex, that the mortality would have been greatly diminished and the percentage of improvement been made much greater. I do not mean to say by this that radical operations in the hands of a surgeon who has made a speciality of brain work is not justifiable, but that in the hands of most

of us, a simple palliative operation will be far better in the long run.

Lumbar puncture has not proved a satisfactory method of relieving intracranial tension, for of the four cases in which this operation has been done at the Massachusetts Hospital, two stopped breathing on the table, and although the pulse could be kept up by artificial respiration for several hours later, the respiratory centre remained paralyzed. In one other case the same failure of respiration occurred from a simple attempt to etherize without operation. In none of these three cases was the attempt made to trephine the skull under artificial respiration, although it seems possible that relieving the intracranial tension in this manner might have enabled the respiratory center to resume its function.

Another point which is to be learned from the records of these cases is that in no case was any good accomplished by exploration in the brain tissue itself by means of incision or explorations with probes or aspirating needles unless on the surface of the brain itself there was some indication of the existence of a cyst or tumor. The indication was in some cases adhesion of the dura or pia, in others a discoloration of the brain surface, and in others a sense of resistance to the touch. In but three cases was a radical removal of a tumor actually done. Two of these died almost at once and the third recurred later.

I may sum up the observations on brain tumor by saying that the reading of these records has made me personally feel that the chance of any success by radical operation was so small, that in any given case diagnosed as brain tumor, even if the symptoms gave evidence of a more or less exact localization, it would be wiser to do an operation simply for the relief of intracranial pressure, rather than to explore with the idea of removing the tumor. That surgical endeavor in brain cases should, for the present, aim rather at devising an operation which might give relief to intracranial tension without exposing the important motor area to trauma and strangulation through the opening in the skull. It would be particularly satisfactory if an exploratory operation could be devised which might serve at the same time to expose a large area for the inspection of the surface of the brain and when the flap was resutured could be so arranged as to prevent bulging of the motor area. Possibly this could be done by removing all of the bone in a large osteo-plastic flap, except the portion covering the motor area, and wiring this portion *in situ*.

REPORT ON RESULTS OF BRAIN AND CORD SURGERY AT THE MASSACHUSETTS GENERAL HOSPITAL.

BY JAMES J. PUTNAM, M.D.

IT has not been the good fortune of the Massachusetts General Hospital, as Dr. Codman has pointed out, to relieve entirely any one of the thirty-six patients who have been treated for *brain tumor* by operation. In no case has there been complete removal of the growth with recovery of the patient, and, judging by the post-mortem evidence, the showing of the future, in this respect, is likely to be slightly, but not radically, better in the future. On the other hand, a considerable degree of palliation has been secured in nine cases, and a scrutiny of the details leads to the conclusions, first, that palliation is a result worth striving for, and next, that if held systematically in view it can be gained oftener and in greater perfection than it has been heretofore.

The best results have been the following:

CASE I. The first case is one already reported by Dr. M. H. Richardson and myself, where a great mass of sarcoma, weighing about a pound, was removed from the left hemisphere at the second of two operations, with complete relief from intense headache and approaching blindness. The patient had become partially crippled and aphasic, but positively enjoyed life for a year and died without a renewal of acute suffering. His wife felt that a great deal had been gained. At the autopsy, the greater part of the left hemisphere was found to have been invaded by the growth.

CASE II is that of a patient who has recently died and has been shown to have had a glioma of the lateral lobe of the cerebellum, impinging on the pons Varolli. Although the tumor was thus below the tentorium cerebelli, a marked relief from terrible headaches and optic neuritis followed the making of a large trephine opening in the parietal region, and this, too, although the bone was replaced. This improvement was attributed to the escape of cerebro-spinal fluid, which gushed in large quantities from the wound in the parietal dura, and presumably relieved for a time the distended ventricles. Some months later, the headaches returning, large openings were made also in the occipital region, but the patient continued gradually to fail.

CASE III. A third patient, a young married woman, suffering likewise from headache and impaired eyesight, and also from epileptiform seizures and from motor aphasia, due to a sarcoma of the frontal lobe, received a measure of relief which her husband reckoned as considerable. In this case a large tumor mass (part of which was removed) protruded through the trephine opening, pushing the skin before it. Its presence caused no serious inconvenience, and it was felt that to tamper with it further would give rise to permanent aphasia.

CASE IV. Again, in a fourth case, with severe general symptoms of the sort already noted, and, in addition, considerable mental failure, the improvement was such as almost to justify a return to work, although an incomplete paralysis of the left hand — less to be sure, after the operation than before it — would have made work difficult. But after some months of this improvement this patient also failed again, and died.

CASE V. A fifth case was one of special interest, because of great improvement in respect to epileptic seizures, an improvement which still maintains itself at the close of two years, in spite of the fact that a glioma of undefinable margins was discovered at the operation. The patient has worked ever since the operation was performed and is still working.

In the other cases of this class, the improvement consisted only in the fact that the patients became less acute sufferers, on the whole, and more easily taken care of by their friends. This care, although often difficult enough, was usually softened by a postponement of the fatal issue, permitting a gradual habituation to the idea of incurability, and a relief of the desperate feeling which almost demands that the prognosis of

"hopeless" shall not be accepted without one struggle for a better outcome.

With regard to the question whether there is an outlook for a more favorable record in the future, either as regards the removal of tumors or palliative operations, I think the conservative physician and surgeon can speak with reasonable hopefulness. There are two relatively new directions in particular in which there is a fair prospect of gain through radical operations. One is in the removal of syphilitic gummas, the other in the removal of tumors of the cerebellum, even those which lie in the so-called cerebellar-pontine angle. No syphilitic cases are included in our list, but a number of successful results have been reported elsewhere, and it has always seemed to me probable that the improvement in circulation consequent upon the removal of pressure would prepare the way for a more effective use of iodine and mercury.

The outlook for the removal of cerebellar growths is better for the fact that it has been found possible to mutilate the cerebellum to a considerable extent without causing serious or uncompensated derangements of its function, and also because of the freedom with which large pieces of the cranial bones are now taken from the occipital portion of the skull, the presence of the dural sinuses offering no serious check to such an operation.

Dr. S. J. Mixter has recently operated upon two private patients of my own with marked success, obtained largely through recognition of these principles. In one case, an endothelial sarcoma was wholly removed from the posterior border of the cerebellum; in the other case, although the tumor was not found, the operation was followed by an extraordinary and thus far a persisting improvement in the condition of the patient.

It is also reasonable to believe that tumors (neuro-fibromata) growing from the cranial nerve-roots of the pons, or from adjacent structures, and occupying the angle between the pons and cerebellum, will occasionally be successfully removed, though the attempt may entail the cutting away of a large piece of one cerebellar lobe.

The whole subject of the diagnosis, pathology and treatment of cerebellar tumors has recently been carefully reviewed in an able series of papers by Drs. Mills, Frazier, Weisenburg and De Schweinitz of Philadelphia, and Drs. Joseph Fraenkel and Dana of New York, published in the New York *Medical Journal* and Philadelphia *Journal* for February, 1905; and in a very valuable article based on the analysis of forty cases, by T. Grainger Stewart and Gordon Holmes, published in *Brain*, winter, 1904.

The statements there made are full of interest and encouragement, although I cannot agree that either clinical or post-mortem evidence bears out Dr. Mills's opinion that from 25% to 50% of cerebral tumors are likely, eventually, to be treated through surgical operation with marked benefit to the patient. The estimation of benefit in these brain cases is, however, not easily expressible in statistical form. A single successful result, when attained, is often such a cause for gratitude as to justify many disappointing efforts.

As regards palliation, I agree with Dr. Codman that, as a rule, palliation means relief of pressure, and that this will be better secured, and more safely, if the operation is addressed distinctly to that end. But sometimes palliation means also partial removal of tumors, and this should be done on the basis of the most thorough neurological localizing diagnosis. Fortunately, the data for such diagnosis are continually accumulating, and often permit a considerable degree of accuracy, even where the Rolandic area is not in question.

The experience of the hospital in the *surgical treatment of epilepsy* is primarily expressed in the statement that, out of 21 cases treated, 9 received benefit, while 12 received no benefit.

This is really a large proportion of good results, and I ask your attention to a brief analysis of a few of them.

Case I is that of a young man of twenty, suffering from attacks of Jacksonian epilepsy, involving the right hand and occasionally leading to loss of consciousness, induced by a cortex-lesion set up by a meningeal hemorrhage which had come on during a typhoid fever, fourteen years previously. Trephining over the Rolandic area revealed a localized meningitis, and a small excision there caused a paralysis of the hand which quickly passed away. As time went by the patient grew better and better, and for some years past he has been substantially or wholly well.

Case II. Another case should be mentioned in conjunction with this one, in which the symptoms were essentially the same as those just now recorded. Here several slight, cord-like, meningeal adhesions were found at the operation, probably due to a severe blow upon the head in childhood. No considerable improvement followed the opening of the skull or the removal of the adhesions.

The surgeon would have been justified in removing large pieces of the cortex in both these cases, with the hope of extirpating an epileptogenic center, but the physiological basis for this operation is not quite sound, and the question of its clinical value is still in the balance.

In the case first reported, the favorable issue did not show itself in full force until some years after the operation, and, of course, the causal connection is uncertain. The same doubt obtains as regards the next case, and yet both belong in a category where spontaneous improvement is a rarity.

Case III. This case was one of epileptic attacks due to fracture in the temporal region in boyhood, leading to a thickening and adherence of membranes at the seat of injury. Better surgical conditions for repair were secured by operation, but for a year no improvement followed, and it became necessary to send the patient to a hospital for the insane, where he remained two years. At the end of the first year, however, improvement began, and for twelve years he has been substantially or wholly free from attacks, and supporting himself by work.

Case IV. In a fourth case, already studied and reported on by Dr. A. T. Cabot, a brilliant result followed thorough draining of a subcortical cyst which had caused a typical epilepsy of the Jacksonian type. The patient was enabled to return to work, freed from his

attacks, to marry, and to carry on, for several years, an extensive business, although he was finally overtaken by his enemy and died.

CASE V. Dr. Beach has likewise reported the case of a young girl, relieved for several years of epileptic attacks due to head injury from a kick of a horse in childhood. The operation consisted in the surgical cleaning up of a condition due to badly healed fracture. After a time, the attacks returned and persisted, in spite of a second operation.

CASE VI. In this case a marked and very satisfactory improvement followed extensive removal of carious bone and thickened membrane from the skull of a syphilitic adult man, although eventually the symptoms returned and the patient died.

The history of these cases, taken in connection with the experience of others, leaves no room for doubt that the cleaning up of the results of old injuries to the cerebral membranes and skull results favorably in a fair number of cases. The favorable outcome seems to be due in part to the removal of reflex irritations and to the securing of better conditions of local nutrition of the cortex. The results are, however, strangely variable, and there is a mystery hanging over the matter which only a far better knowledge than we now possess, of the physiology of the brain and the pathogenesis of epilepsy, can dispel. The most important point as regards the treatment of epilepsy by operation is as to the value of excision of motor-areas of the cortex in cases with localized aura. This is still in doubt. There is much to say of a practical character in its favor, but our knowledge of the physiology of the brain and the genesis and nature of the epileptic seizure is still too immature to be utilized satisfactorily as the basis of so radical a procedure.

It would be idle to claim that this report represents the best that neurology and surgery can accomplish in the operative therapeutics of these important diseases. It is a bare record of interesting hospital experiences, acquired through a conscientious following of established methods. The next report, rendered perhaps at the termination of another decade, will doubtless tell of more instances of success. But when the time comes that in each one of our great hospitals one surgeon is given the opportunity of cultivating this branch of neurological surgery as a specialty, then first we shall be able to do our best work. Surgeons with neurological training are positively needed. The difficulties in the way of deciding whether to operate, where to operate, and how to operate are so great that the man is who to succeed must have long bathed to the neck in physiological, pathological and neurological research, and must have made "his hands the ready servants of his will," in that particular line. The most useful hospitals of the future, from the standpoint of the community, are likely to be strongly characterized for their encouragement of specialism and "team-work."

It might be urged that brain surgery, at the best, presents but little of attraction for the specialist. But this is not true if brain surgery is considered in its proper place as one branch of the large field of neural surgery. I recognize the difficulties in the way of promoting specialism of such sorts and do not pretend to offer a solution. Yet while they remain unsolved we must be content, as a rule, to follow where others lead, though the work will always be guided by conscientiousness and intelligence.

RESULTS IN NONTRAUMATIC SURGERY OF THE BRAIN AT THE BOSTON CITY HOSPITAL.*

BY WILLIAM N. BULLARD M.D.

THE examination of the records of the Boston City Hospital has brought to light forty-four cases of the character which come under discussion tonight; of these thirty-nine are cerebral or intracranial, five are spinal.

The intracranial cases may be divided as follows:

I. Operations performed for epilepsy.

II. Operations performed for persistent headache after injury.

III. Operations performed in cases of unconsciousness with doubtful history when nontraumatic hemorrhage is suspected; for non-traumatic hemorrhage or for alcoholic edema.

IV. Cases of intracranial tumor: Cerebral, 4; cerebellar 2, in addition to these, two cases of abscess of the brain and four cases of cysts. (Some of the cases of cysts are included under Section 1.)

When we consider these cases statistically in relation to the results obtained, it is at once evident that little or no reliable information can be gathered from the hospital records as usually kept except in regard to the number of deaths which occurred while the patients were still in the hospital or in those few cases, such as brain abscesses, where an immediate result may be expected. On the other hand, in the large majority of patients the real benefit of the operation can only be determined after weeks or months,— long after the patient has left the hospital. No cases have been considered unless we could trace their conditions for some time after discharge from the hospital.

The variety of the cases with which we are dealing here is so great and the differences between the various forms even in those of the same class so marked that no reliable conclusions can be drawn from the consideration of them as a whole. The cases, therefore, must be considered separately and each one on its own merits.

As the time is short, I propose to confine my remarks entirely to the first class of operations,— those on patients suffering from epilepsy. There are 18 patients in this class of whom three patients could not be traced.

Traumatic epilepsy. — In 12 patients injury was the apparent cause of the epilepsy.

Results. — Three of these cases must be considered as not relieved.

The least favorable case was that of a man, fifty-two years old, who had received a severe injury three years previous, and for one year had been subject to epileptic

*This subject will include palliative and radical operations for intracranial and intraspinal lesions, either objective or functional, cases operated on for abscesses, cysts, tumors, dural adhesions and for epilepsy.

attacks starting in the fingers of the left hand and limited to the left limbs. The operation, in which nothing abnormal could be discovered either in the brain or dura, gave no relief and the patient *died* in epileptic status five weeks later.

(3) Male, eighteen. Trauma seven years previous. Epilepsy for six years. Left the hospital three weeks after operation, not relieved. After reaching home he seems to have grown slowly worse and died two or three years later.

(16) Female, twenty-six. Trauma sixteen years previous. Epilepsy for two years. Left the hospital eighteen days after operation, "relieved." Is now, nearly six years after operation, an inmate of the State Hospital for Epileptics and her attacks are frequent and violent.

In one case the result may be considered as doubtful.

(17) On a girl seven years old, three operations about a month apart were performed and the patient was discharged "relieved," ten days after the last. This was five years ago, January, 1900. When her home was visited a few days ago her mother was seen. She thought that the operations "did no good," but the attacks were fewer than formerly. It had not arrested the progress of the disease and the girl had become more demented. In this case a cyst of the brain was found.

The rest of the cases were all improved.

(27) Male, eighteen years old. Was brought to the hospital because he was becoming so forgetful that he could not work properly as a plumber's assistant, and he had attacks of petit mal. At the operation an excess of subdural fluid was found. Three days later he was discharged "well." The father whom I have seen had doubts as to whether the operation had been of any benefit. Nevertheless, he has enlisted twice since the operation; once at least in the regular army. Was returned invalided from the Philippines and is now in a hospital for the insane at Washington, D. C.

This case was at first classed as doubtful, but in view of his apparently increased activity and usefulness, we have considered that it should be placed under the heading of "relieved."

(5) Male, thirty-seven. Injury, five years ago. Epilepsy, eighteen months. Three days after the operation several convulsions; none afterwards up to the time of discharge a month later. Improved on the whole.

(10) Male, twenty. Shot with pistol in head eleven years previously. Epilepsy for five years. No trouble for two months after operation. Then went to North Carolina and cannot be traced. Cerebral cyst.

(21) Male, twenty-seven. Injury when two years old. Had had epilepsy five years. Cyst of the brain found at operation. Was relieved and number of attacks diminished. Later had another operation when the cyst was drained and since has been much improved.

(30) Male, thirty years old. Had had compound fracture of the skull six years before. Epilepsy since. There was an old trephine hole and gold foil was imbedded in the cicatricial tissue over it. The patient was relieved for some months, though he still had attacks. He then went to Washington, D. C., and has not been heard from since.

(11) Male, forty-one. Trauma eighteen years previous to operation. Epilepsy five years. A week after operation, several convulsions. Since, much improved. No return of fits. Family greatly pleased.

(15) Male, nineteen. Student. This is a very extraordinary case. Previous to operation he had had attacks of extreme violence, in one of which four attendants found him difficult to manage. There was apparently no immediate result after the operation as he was sent to Bloomingdale Asylum. After coming out he resumed his studies in which he had always stood well; graduated from a well-known college and later became instructor therein. Was evidently a sort of genius. There was some doubt in this case as to the nature of all his attacks. He had undoubtedly hysteria and the case is probably one of hystero-epilepsy.

(14) Female, fifteen. Operation in 1898. Family physician reports that she was much improved. She left her former home one year ago to go to Northern Vermont to live.

NONTRAUMATIC CASES.

Of these there are three:

(2) Male, thirty-seven. Had had fits for eighteen years — about one every two weeks. At the time of leaving the hospital the patient thought that the operation was of much benefit, but the disease seems to have progressed as he was, two years later, sent to the Worcester Insane Hospital where he was kept about six weeks.

(4) Male, forty-eight. Had had apoplexy and left hemiplegia. His attacks almost ceased after operation when a cyst was found and for eight months he was much better. Then began to drink beer. Fits returned. Re-entered hospital for second operation. Seems to have improved again for a time at least. [This condition was followed for three months.] Three years later he was brought into the hospital unconscious in epileptic status. Operation was of no avail. Died in epileptic status. Autopsy showed multiple cysts of the brain.

(13) Male, twenty-six. Idiopathic epilepsy six and one-half years. Operation, July, 1898. Had a series of attacks in April, 1899. Nevertheless, improved and can do work which he could not do before. Desired a second operation, which was done in May, 1900. Decided improvement. This case was reported by Dr. Munro.

Summary: Trephining for epilepsy, 18 cases; results unknown, 3. Traumatic, 12 cases: Not relieved, 3; doubtful, 1; relieved, 8. Nontraumatic: Apoplexy, with multiple cysts, 1, relieved; idiopathic, 2, one improved; in the other, in spite of possible temporary relief, the disease seems to have progressed.

Two of our cases died (4, 12) and in both multiple cysts of the brain were found at the autopsy.

In two other cases (10, 17) cysts were found on operation.

Three of these cases were supposed to be due to trauma, one non-traumatic.

It seems probable that when cysts are present, the result of operation is likely to be more favorable than in those cases where they do not exist. Our statistics on this point are too few to be of value.

Of special interest is the long duration of the disease in some of the cases which were relieved. It has been commonly supposed that after two or three years an epileptic habit was likely to form, which might and probably would continue, even after the removal of the existing cause. Cases 11 and 21 are instances of relief after long duration of the disease. In the first, the injury had occurred eighteen years previous, and in the second the cyst has apparently been in existence twenty-five years.

THREE CASES OF INTRASPINAL TUMOR. OPERATED ON BY J. C. WARREN, M.D.

BY WALTER B. ODIORNE, M.D.

THE three cases to which I shall refer are all of tumors within the spinal canal. Two of the tumors were of the extramedullary type and enucleable. The third was intramedullary and incapable of being removed. All three patients were referred by Dr. J. J. Putnam to Dr. Warren for operation, and to both of these gentlemen I am indebted for the privilege of reporting the cases. Two of the cases, the first and last, were reported by Dr. Putnam,[1] in May, 1899, about a year after their operations; the second was a patient at the Massachusetts General Hospital last December. As I have been able to see and personally examine all three of these patients within the last few days, it seems that a further report of their late convalescence is of some interest.

CASE I. The patient was a lady of about fifty years of age at the time of her operation in June, 1898. For a year and a half she had suffered from attacks of pains of increasing severity and frequency, over the left lower ribs and left side of the abdomen, extending at times to the groin. Six months after the onset of the pain she began to have difficulty in walking, and from that time on the pain and weakness gradually increased. Walking became impossible, and at the time of the operation she was unable to stand alone and had begun to have difficulty in controlling the bladder. There was marked impairment of sensibility in the area of distribution of the lumbar nerves; slight impairment over the whole abdomen. The knee jerks were exaggerated and ankle-clonus was present.

At operation, Dr. Warren found at a level of the ninth dorsal vertebra, and beneath the dura, a fibrous tumor, the size and shape of an olive, lying loosely in the meshes of the pia and easily removed. Its firm consistency offered unyielding pressure on the left and posterior surface of the cord.

The convalescence in this case is interesting because it was so long protracted, and, in this respect, offers marked contrast to the second case I shall mention. The first month was attended with extreme suffering with a zone of hyperesthesia around the body. Slight signs of voluntary motion appeared early, but were always associated with cramps of the muscles. A year later she could walk short distances, with only a cane for aid. Her body was bent forward most of the time and she suffered much pain in the back and sides. At that time Dr. Putnam said "that although greatly improved she was still far from well."

Since this report, now six years ago, the history has been one of very slow but progressive improvement, even up to the present. She is now in excellent health and may be said to have almost completely recovered, but the recovery of function in the injured cord has apparently taken years in its accomplishment. She has been free from pain for less than a year, and although now there is a return of normal sensibility and absence of undue excitability of the deep reflexes, yet these conditions persisted for a long time. Until a year and a half ago she was unable to walk more than fifty yards without sitting down for rest. The afternoon I saw her, a week ago, she had taken a considerable railroad journey that day, had walked for miles in the shopping district of Boston, and yet showed little fatigue. Her chief complaint now is of an occasional involuntary drawing up of the left foot, perhaps largely of nervous origin. When tired she still assumes a stooping posture and suffers some pain in the region of the wound.

How much the long persistence of pain and other symptoms was due to old association and the formation of a habit of pain, and how much it was due to an unusually slow repair of the cord, is difficult to determine.

CASE II. The second case, that of a woman of twenty-seven, is similar in many respects, yet offers certain points of difference, especially as to convalescence. The history in brief is of pain in the left side of two years' duration. Then of numbness in the feet and legs with difficulty in walking, going on to complete inability to walk or stand alone, with intense pain and impaired sensibility over the area of distribution of the lumbar and lower dorsal nerves, and exaggerated reflexes.

Dr. Warren removed the laminæ of the seventh, eighth and ninth dorsal vertebræ. Opposite the eighth vertebra beneath the dura, was a soft, dark reddish tumor, ¾ of an inch long, and the width of the canal, a psammoma. On its removal the cord was seen to be much compressed, pushed to the left and flattened.

Sensibility and voluntary motion appeared early. In a month of comfortable convalescence she was moved to her home in Gloucester, where I saw her a few days ago, three and a half months after her operation. She has been free from the distressing pain, so marked a feature of the first case. She now walks about a good deal, usually with a cane, but not always. Her gait is spastic and the body slightly inclined forwards, but she can go over the stairs with a little assistance. The deep reflexes are slightly exaggerated, but movements are unlimited in all directions, and sensibility is practically unimpaired. In many ways she has gained as much in three months as the other patient did in as many years. A complete recovery can reasonably be expected.

It is impossible to predict in a given case as to the amount of improvement which may be looked for, for the symptoms and signs, and indeed the appearance and size of the cord itself at the site of the tumor, give no accurate indication of the amount of injury done. Recovery has followed operation in cases where signs of a partial lesion due to compression have changed to those of a total transverse lesion of the cord with absolute loss of sensibility, flaccid paralysis and loss of deep reflexes. Horsley operated on a man four days after the onset of such signs and removed a fibroma the size of an acorn. Eight months later, the patient resumed work as a farmer.

Such a transverse lesion may have been due, as Cushing says, to a partial injury with a physiological "block" of the remainder.

Recent studies by Collier[2] and others lead to the conclusion that in the process of repair divided spinal tracts are capable of regeneration. In a few cases, the clinical picture of a total lesion has changed to one of partial lesion at a time so long after its occurrence as to offer substantiation to this view. Collier cites a case of complete fracture dislocation in the region of the ninth

[1] American Journal of Medical Sciences, October, 1899.

[2] Collier: Brain, 1904, vol. xxvii, p. 38.

dorsal vertebra, in which after many months some motion returned to the toes of both feet with return of knee jerks. Autopsy showed a cord the size of a quill for 6 cm. which on longitudinal section showed a number of nerve-fibers passing through the lesion, whose appearance and irregularity suggested that they were the results of regenerative growth.

The paralysis caused by compression of the cord may undoubtedly be due to one or more of a variety of conditions, from simple localized anemia to actual necrosis and destruction of tissue. It is probable that the restoration of physiological function depends largely on the nature of the injury done the cord. The extent of this injury cannot be accurately determined by clinical signs nor by inspection of the cord at operation.

Case III is a man, now forty-nine years old, who for twenty-five years has been suffering from symptoms of an extensive intramedullary growth of the cord. For sixteen years he has been completely paralyzed below the waist. Fourteen years ago, laminectomy was done by Dr. Keen of Philadelphia. An enlarged bluish cord was found, nothing more. For several years thereafter, the man's health remained fairly good, but he was still subject to attacks of pain in the back with chills and high temperature, evidently associated in some way with the spinal disease.

In January, 1898, signs of a progressing paralysis appeared with numbness in both hands, together with incessant pain in the neck and head which became intolerable. As a last resort for the relief of the pain, laminectomy was done by Dr. Warren. The cord above the old cicatrix was found soft and thickened, but contained no cavities. On recovery from ether, the pain was gone and has never returned. It is now seven years since the operation. More striking was the complete return of sensation in the fingers and the fact that there has been no recurrence of the chills.

Whether by relief from pressure or by a strong effort to break up the habit of pain the laminectomy produced a marked effect, and the case, as Dr. Putnam has said, "should bring encouragement to those inclined to operate, even where no radical cure is expected."

REPORT ON OPERATIONS FOR CEREBRAL TUMOR AT THE BOSTON CITY HOSPITAL.

BY F. B. LUND, M.D.

It has always been recognized and always will be recognized that the majority of cerebral tumors are both impossible to find and impossible to cure. This is due to the fact that many of them are located in such areas of the brain that they do not manifest themselves by localizing symptoms until after the general symptoms which indicate a large-sized tumor and marked increase of cerebral pressure have existed for a long time. Certain cerebral tumors are so favorably situated, however, namely, in the motor area, that they manifest themselves by localizing symptoms long before the general symptoms appear. These are the cases which, unfortunately, will form but a small class, especially favorable for surgical removal.

Our knowledge of cerebral localization has been extended in the regions anterior and posterior to the Rolandic motor region of late years, both by the study of localization of the stereognostic sense, of cutaneous and muscular sensibility, of the higher and lower visual areas, the various forms of aphasia and of certain important sensory areas.

Mills of Philadelphia published in 1902, in a most interesting paper, a new scheme of the centers of the human cerebrum. He has given a résumé of the symptoms produced by cerebral tumors on the centers which control the various parts of the human body, in the regions in which they appear, corresponding to the seven areas from the front to the back of the brain, and has demonstrated the value of his scheme for diagnosis by several cases, so that we may yet hope to be able to diagnose a considerable number of these tumors situated in the cortical and sub-cortical regions in time for their removal. The tumors situated in the internal capsule and deeper areas of the brain are obviously non-susceptible to surgical interference. Another discouraging characteristic of all cerebral tumors is that, growing from and actually destroying the nerve centers as they do, their removal does not permit of a renewal or replacement of these centers, so that so far as paralysis produced by a brain tumor is due to the replacement of cortex by the tumor, its relief is not accomplished by the removal of the tumor. Paralysis produced, however, by pressure on the centers in the neighborhood of the tumor will be recovered from after removal of the tumor.

But another class of tumors whose removal may be confidently expected to relieve both local and general symptoms depending on their pressure are the cerebral cysts, which follow old hemorrhages. After drainage or removal of these cysts the epileptic and other symptoms, local and general, and paralyses are not infrequently recovered from. The writer has had one extremely favorable result in a case of this character, a cyst of the frontal lobe following a fall in childhood.

On the other hand those cases which have been summarized by Dr. Bullard will show that in the cases where nothing but adhesions or scar tissue have been found, in the main, except for the psychical effect, there has been little benefit from operation.

In considering the question of operating for brain tumors, however, there are certain other things to remember besides the difficulty of locating the tumors and the difficulty of finding and removing them. We have to consider the *comparative* results of surgical and medical treatment.

The question is, What can surgery offer a patient suffering from brain tumors? And what can we expect from medical treatment, which means letting alone? Medical treatment gives absolutely no hope either of cure or of relief. Surgically, in a small minority of cases, we can remove a tumor which does not return, or recurs only after an interval, and we can, therefore, relieve the general pressure symptoms, and the local symptoms in so far as they are dependent

upon pressure, thus considerably improving the condition of the patient. In cases where it is impossible to find or to remove the tumor we may, by removing large areas of bone, relieve the cerebral pressure for long periods, thereby greatly relieving the headaches and putting a stop to the optic neuritis and blindness. Tapping the ventricles is useful also as a measure of temporary relief.

Not to be forgotten is the very natural satisfaction of the family and friends of the patient in cases which are operated upon, in the knowledge that everything possible has been done. This satisfaction cannot be felt unless surgery has been resorted to.

Considerable improvement has been made of late years in the technique of craniotomy. It is no longer regarded as a formidable, but as a simple and very safe operation. The Devilbiss forceps and the use of the electric motor have made it very much easier to remove larger areas of skull. The use of the hammer and chisel and the very large trephines formerly employed have been abandoned by the majority of modern surgeons. The small trephine is used to enter the skull and then the large forceps or cutting instrument driven by an electric motor are used to enlarge the opening. We have learned from Cushing and others not to spend a large amount of time in suturing the dura. We are seeking the removal of pressure and need not waste time in attempting to restore that pressure on the brain by suturing a tight fibrous membrane over it. The replacement of the osteoplastic bone flap, however, is important as a protection where large areas of brain are exposed. Operation in two stages has enabled us to successfully treat many cases which formerly would have succumbed to an operation performed in a single stage.

Work has been done recently which shows us that cerebellar tumors will probably in the future be recognized early and that their removal will be as safe and simple as that of ot her neoplasms of the brain. Frazier and Spiller have shown that in order to reach a tumor situated on the under side of the cerebellum large areas of the cerebellum can be destroyed without affecting the patient. Frazier, in a remarkably interesting article, reports six cases of tumor of the cerebellum, in two of which the tumor was successfully removed without recurrence and with recovery of the patient. One only of the patients died from the operation. In one case the tumor was too extensive to remove, but the patient was relieved by the operation, and in another, although the tumor was not found, the symptoms were very much relieved by removal of the pressure. These results were accomplished in the hands of Frazier and Spiller by careful attention to diagnosis, and the use of modern instruments for craniotomy, including a surgical engine. On the basis of these cases Frazier speaks hopefully of the removal of tumors of the cerebellopontile angle, the discovery of several of which at autopsies has recently excited so much interest in neuropathological circles in this community, and he has devised an operation for getting at tumors so situated. His paper, which was published in the New York *Medical Journal* for February, will well repay perusal by those interested in the subject.

The demonstration by Dr. Mixter that the occipital bone may be freely removed even across the surfaces of the sinuses without danger of hemorrhage, is a very important addition to our technique in this field as it enables a much freer exposure of the cerebellum.

The time limit enables me to speak but briefly of the actual cases, and I have confined myself simply to tumors of the cerebrum and the cerebellum. I find from the records and from four private cases of my own which I have added, that there are six cases in which the diagnosis of cerebral tumor was made, and four cases of tumor of the cerebellum.

In the first case, Case VII on the list, the operation was performed for the relief of general symptoms of cerebral tumor, headache, vomiting and optical neuritis. The tumor was not found. The patient was somewhat relieved, but died several years after leaving the hospital.

The second case, Case XX on the list, gave no definite localising symptoms. The tumor was not found. The patient improved after the operation and the subsequent history has not been ascertained.

In case three, Case XXXIV on the list, the tumor in the motor area which had caused general as well as local symptoms was found, but could not be removed on account of its extent. In this case it was doubtful whether operation was of any benefit.

Case four, Case XLIV on the list, was operated upon for general symptoms, — blindness, deafness, vomiting and headache. There were no localising symptoms. The tumor was not found. The patient died twenty-four hours after operation. Autopsy showed gliosis of the occipital lobes.

CASE V, personal case. A tuberculous tumor in the Rolandic region was accurately localized by Dr. E. W. Taylor, by the local symptoms before the general symptoms had developed, and was removed. There resulted complete relief from most distressing headaches for one month, at the end of which time the patient died of generalized tuberculosis, which he had had at the time of operation.

CASE VI. Patient of Dr. Morton Prince. Was operated upon by the writer on account of general symptoms. The diagnosis was internal hydrocephalus. The patient who was moribund, was slightly benefited by the relief of pressure accomplished by the removal of a large area of bone from the right parietal region, but died about forty-eight hours after the operation. Autopsy showed a tumor the size of a pullet's egg replacing the caudate nucleus and causing dilatation of the left lateral ventricle, due to obstruction of the foramen of Munro.

The tumor was on the right side, the same side upon which the operation was performed. The attempt to tap the right ventricle, which was entirely collapsed, was unsuccessful. Trephining on the other side and tapping the left ventricle might have given slight temporary relief.

Of these seven cases of cerebral tumor three died from operation. All of them were operated after general symptoms had progressed to a very grave extent. In two of them the autopsy

showed the presence of inoperable lesions which would necessarily have soon proved fatal without operation. In one of the two remaining cases which survived the operation the tumor was not found. In one of them it was found and removed with relief of symptoms. The other case was apparently not affected by the operation.

Of the cerebellar tumors I have notes of three cases, one found in the list and two personal cases.

These cases all proved fatal. Two of them were operated upon after the patients were moribund and long after the symptoms should have indicated exploration which would in one case, I am confident, have enabled successful removal of the tumor.

The third case was a personal one operated upon for Dr. Taylor, which came to me after the general symptoms of headache, vertigo and optical neuritis had obtained for a very long time, and the tumor was found to be of considerable size. Operation showed that the tumor arose in the pons and only secondarily involved the cerebellum, obstruction of the aqueduct of Sylvius having caused hydrocephalus to a marked degree. The location of the tumor rendered it entirely inoperable.

An attempt to make deductions from so small a number of cases is almost worthless. A review of these cases, however, makes it evident that the failure to relieve was almost invariably due to the nature of the case and not to the methods of operation.

A review of recent literature of cerebellar surgery will show that better work is being done in diagnosis and in the operation on tumors of this class at the present time than is indicated by the series here presented.

Increasing attention to the diagnosis and greater confidence in the technique have led and will lead to better results. Craniotomy should no longer be regarded as a *dernier ressort*, and in the hands of those who are willing to pay some attention to their diagnosis and technique, ought to benefit many sufferers from cerebral tumors and perhaps cure a few of them.

THE OPERABILITY OF BRAIN TUMORS FROM THE POINT OF VIEW OF AUTOPSIED CASES.

BY G. L. WALTON, M.D.

The estimates of the operability of brain tumors based upon autopsied cases, collected by Knapp in 1898, varied from 3% (Seidel) to 17% (Dana).

The personal equation, doubtless the main cause of the variations, can be reduced to the minimum by dividing the cases into three classes, namely, operable, inoperable, and doubtful, instead of attempting to draw a sharp line between operable and inoperable.

Into the operable class fall the primary, accessible, well defined tumors which can be removed without cutting into brain tissue. Such tumors spring in the great majority of cases from the dura; many are designated endotheliomata, a term including spindle-celled sarcomata and certain psammomata, growths in which groups or whorls of cells have undergone hyaline degeneration and calcification (Blackburn). The present tendency is to class these tumors according to their original nature, rather than according to the form of degeneration.

Into the inoperable class fall tumors involving the deeper structures of the brain, as well as most cases of multiple growth and of wide-spread metastasis.

In the doubtful class may be placed gliomata and nonencapsulated sarcomata in accessible regions, and cysts in which operation can only evacuate the contents. The scepticism prevailing among pathologists regarding the operability of gliomata seems well founded. The attempt to check their growth by operation is merely equivalent to removing a portion of decayed fruit.

With the collaboration of Dr. Paul, I have studied 171 autopsied cases from the records of the Massachusetts General Hospital, Boston City, New York City, Danvers, Taunton, and Worcester Insane Hospitals, Mt. Sinai Hospital and Montefiore Home, and the private collections of Drs. Harlow Brooks, J. J. Putnam and E. W. Taylor, as well as our own. The number was increased to 374 by a series of published reports.

The results were as follows: operable tumors, 7.5%; inoperable, 79.4%; doubtful, 13.1%.

The combination of operable and doubtful was 20.6%, or approximately the estimate of Dana. Eliminating the cases of other infection, and the cases with no symptoms, the operable cases were reduced on the other hand to 4%, approximately the estimate of Seidel. This shows the influence of the personal equation.

A number of operable endotheliomata without localizing symptoms were found near the median line and under the frontal lobe, facts which should lead to exploration of the surface, especially in these directions, rather than to puncture of the brain in search of deep-seated removable tumors, which autopsies show to be practically wanting. If both surface exploration and puncture are deemed necessary and safe, the former should precede.

The comparative simplification of classification of tumors is noteworthy. Nearly all are now included under the essential nervous system growths (glioma), the connective tissue growths (fibroma, sarcoma, endothelioma, angioma, angiosarcoma, osteoma), the epithelial (carcinoma cholesteatoma), the infectious granulomata, (tubercle, gumma, and actinomycocis), and the parasitic cysts.

The comparatively rare appearance of gumma is noteworthy, and this clinical diagnosis should not discourage operation.

A fixed plan should be followed in advising operation. In one collection two successive cases were found with identical symptoms; in one operation had been unsuccessfully attempted; in the other no operation was attempted, but autopsy disclosed an easily removable endothelioma in the region indicated by the symptoms.

OPERATION FOR CEREBRAL ABSCESS.

BY F. L. JACK, M.D.

IT may seem presumptuous for a specialist to take part in a discussion on cerebral abscess before a society of general surgeons. However, as chronic suppurative inflammation of the middle ear is a cause of a large proportion of brain abscesses the ear specialist seeing and treating such cases is in a position to suggest points of interest in them in regard to localization and the best means of operating and the subsequent treatment.

The mortality is very great, from failure in finding the abscess, from meningitis, secondary abscess, etc. In 14 cases operated upon at the Massachusetts Charitable Eye and Ear Infirmary there was but one recovery. A report of this case was published in 1901 in connection with "A Study of the Aphasia persisting during Convalescence," by Dr. George L. Walton. Nine cases were operated upon at the Massachusetts General Hospital, all fatal except one operated upon by Dr. John Homans, — two recoveries out of 23 cases in both hospitals.

The abscess caused by ear suppuration is almost invariably situated in the temporo-sphenoidal lobe from one-fourth inch to an inch within the substance of the brain and directly over the roof of the middle ear, sometimes in the cerebellum from perisinusitis and rarely one in both regions.

In the one successful operation at the Infirmary and in two other cases, for a time promising, the opening through the squamous bone (trephining) was avoided for two reasons, — failure in previous operations to discover the abscess and the subsequent danger of hernia.

The bone, however, was freely removed from the middle fossa into the attic of the middle ear and the opening into the brain made at this point by means of a knife with a small slender blade, such a knife being preferable to a canula or needle.

Imperfect drainage seems often the cause of a fatal result, and in my experience gauze wicks are much less satisfactory than a rubber drainage tube. In the two cases of recovery mentioned the tube was used.

Clinical Department.

TWO CASES OF TYPHOID FEVER WITH ACUTE GENERAL PERITONITIS — CAUSED IN THE ONE CASE BY THE PERFORATION OF A TYPHOID ULCER, AND IN THE OTHER CASE BY THE RUPTURE OF A CHRONIC PYOSALPINX ACUTELY INFECTED BY THE TYPHOID BACILLUS. IN EACH INSTANCE OPERATION WAS FOLLOWED BY RECOVERY.

BY CHARLES L. SCUDDER, M.D.
Visiting Surgeon to the Massachusetts General Hospital, Boston, Mass.

CASE I. Young adult, male; typhoid fever; perforation of the ileum; diffuse peritonitis; perforation closed by suture; abdominal cavity irrigated and drained; culture from the abdominal fluid contained the B. coli communis. Recovery.

W. R. B. Twenty-one years old, single, entered the Massachusetts General Hospital June 1, 1904. Hospital record No. 137,600.

Three weeks previous to admission he had chilly sensations, headache, pains in the back and legs. He worked one week, and then, becoming too sick to work longer, went to bed.

Examination finds a well-developed man, having a flushed face, a moist tongue and an abdomen somewhat retracted and tympanitic with slight muscular rigidity. There was considerable general tenderness throughout the abdomen, but more especially marked upon the left side. The hemoglobin count was 90%. The white count was 5,700. The temperature 102.2° F. Pulse 80. Respiration 28. June 3, the Widal reaction was positive.

June 8, the bowels had not moved for two days. This morning he began to have considerable distention and severe abdominal pain. There was great relief from a turpentine enema. The temperature during the day rose to 105° F. In the evening after the bowel movement, the temperature was 100° F. The white count was 22,000.

June 9, at four o'clock in the morning, he had a severe attack of abdominal pain resembling the attack of June 8, but more severe. The abdominal wall was generally rigid and tender, especially upon the right side. He vomited three times during the night. This morning he expressed himself as feeling much more comfortable than yesterday. The white count was 22,000. At five o'clock this morning the pain increased in severity, and the white count rose to 24,400. Just previous to operation shifting dullness was detected in the flanks. Upon opening the abdomen by a median incision below the umbilicus there was an escape of gas, and of intestinal contents in large quantity. The intestinal coils were everywhere reddened and covered with fibrin, especially upon the right side. One perforation of the bowel was found in the ileum about eighteen inches from the cecum. This perforation was closed by sutures. The peritoneal cavity was irrigated with salt solution. Gauze wicks and rubber tubes were placed in the pelvis. The man made an uninterrupted recovery.

The bacteriological report from the Clinico-Pathological Laboratory of the hospital was as follows: Peritoneal and abdominal fluid. A gray-white scum of growth of a bacillus morphologically like the colon bacillus. The bacillus produces gas in glucose agar and is regarded as being the bacillus coli communis.

(Signed) OSCAR RICHARDSON, M.D.

CASE II. Adult female; typhoid fever; end of the third week acute abdominal pain; rupture of the old pyosalpinx; rupture occasioned by an acute infection of the pyosalpinx by the typhoid bacillus. Diffuse peritonitis; salpingectomy; the abdominal cavity irrigated and drained; the abdominal fluid contained a pure culture of the typhoid bacillus. Recovery.

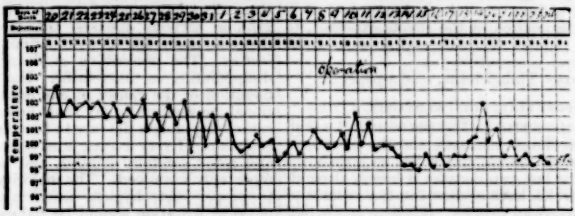
A. C. S., 38 years old, married. A patient of Dr. Stowe of Medford Hillside. Massachusetts General Hospital No. 137,446.

She has always been well excepting for children's diseases.

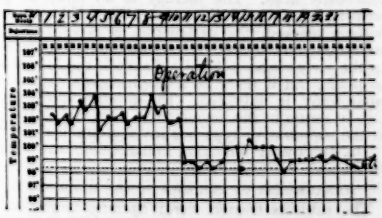
About four weeks ago she was taken ill with malaise, cramps in the stomach and bowel, and diarrhea. She went to bed May 15. She entered the hospital May 20. The abdomen was full, moderately distended, tympanitic, and the abdominal muscles were somewhat rigid. The spleen was not palpable. The temperature was 102.2° F. Pulse 102. Respiration 32. Hemoglobin 80%, white blood count 9,900. May 22, several rose spots were noted. Appearance, typhoidal. May 23, Widal reaction positive.

June 5, no distention, temperature nearly normal,

very comfortable. June 8, at half past six in the morning, she had a severe abdominal pain. This pain was most intense in the lower part of the abdomen. The pain appeared just after a natural movement of the bowel. Immediately following this attack of pain the abdomen was held rather rigidly, and was moderately tender in the lower part. The pain was followed by a chill, and the temperature rose to 103.6° F. Slight shifting dullness was noted in the flanks. The rigidity of the abdominal muscles had increased. The white count rose from 9,000 to 18,000. An hour after the last chill the temperature rose to 104½°. At twelve o'clock noon, the temperature was 105° and the pulse 130°.



Vaginal examination discovered a fullness and increased resistance in the left cul-de-sac and a suggestion of bogginess. Operation at this time by a median incision below the umbilicus disclosed free, thick puriform fluid throughout the abdomen. There was no fecal odor to the fluid nor was there any gas in the abdomen. The appendix was normal. The ileum was examined for several feet above the cecum and no perforation was found. The pelvis, where the pus was most abundant, was explored and a mass was found to the left of the uterus which proved to be a pyosalpinx, and corresponded to the tumor felt upon vaginal examination. The salpingitis was a chronic one. The wall of the sac was thick and edematous and had ruptured allowing the escape of the contents of the sac into the abdominal cavity. A salpingectomy was done leaving the left ovary. The abdominal cavity was flushed with salt solution. A gauze wick and rubber tubes were placed in the pelvis. Excepting for a rise in temperature upon the ninth of the month,



about nine days after the operation, convalescence was uninterrupted. The rise of temperature was thought at the time to be indicative of a slight relapse of the typhoid infection. The wick to the pus cavity was entirely removed upon the morning of the fourteenth, and the gradual rise in the temperature from the fourteenth to the nineteenth would suggest that retained puriform material might have been the cause of the temperature.

Pathological report: A lagre pus tube which had ruptured in the course of typhoid fever. The walls of the tube were covered with exudation and upon microscopical examination showed a fibrous structure with a general round cell-infiltration. Diagnosis, chronic salpingitis. W. F. Whitney, M.D.

The bacteriological report by Dr. Oscar Richardson from the Clinico-Pathological Laboratory of the hospital is as follows: The culture showed about fifty small to medium-sized, round, grayish-white, glazed colonies of a bacillus like the typhoid bacillus. Sub-cultures showed the typical growths of the bacillus of typhoid fever. Widal's reaction was immediately positive with blood from a known case of typhoid fever in dilution of 1–10. The bacillus is regarded as being the bacillus of typhoid fever.

Reports of Societies.

THE AMERICAN THERAPEUTIC SOCIETY.

Sixth Annual Meeting.

Held in Philadelphia, May 4, 5 and 6, 1905.

Friday, May 5. — Continued.

(Concluded from No. 2, p. 59.)

NOTES ON THE TREATMENT OF HAY FEVER AND ASTHMA.

This was the title of a paper by Dr. C. H. Knight, New York. In all cases of asthma, he said, it is well to examine the nose, as well as the pharynx, and the origin of the disease may sometimes be demonstrated by mitigating or abolishing bronchial symptoms by means of an application of cocaine. When no effect is observed, especially in the absence of an obvious abnormality, it is safe to assume that the upper air tract is not concerned. In any case, it is customary to combine local with general medication directed against the attack itself, as well as the underlying diathesis. Most patients go through what is called "regular treatment," and in despair resort in turn to the familiar quack nostrums, many of which contain a certain proportion of well-known drugs. The relief they get from a patent medicine enclosed in circulars expounding the wonders this preparation has worked, while a physician's prescription containing similar ingredients is utterly ineffective, will remain more or less of a mystery until perhaps explained by Christian Science or human credulity. Among the methods of treatment mentioned in the paper were the intratracheal injection of menthol, glycerin and gelatine, the hypodermatic use of atropine in doses sufficient to counteract the state of nerve excitation, silver nitrate injections over the course of the vagus in the cervical region, cauterizing the nasal septum opposite the anterior end of the middle turbinate body, Dunbar's antitoxin, the insufflation of aristol into the maxillary

antra, the local use of adrenalin and of quinine, and intraturbinate injections of paraffin. In judging of the effect of a remedy in hay fever, he said in conclusion, one must not forget that the severity of the attacks depends largely on atmospheric conditions. Moreover, the personal equation should not be overlooked. Most of these patients are very impressionable and amenable to suggestive therapeutics. In order to properly test a drug or method of treatment it is well to give no intimation of the effects expected, to observe a large number of cases, and to extend the study over several consecutive years.

DR. J. M. ANDERS, Philadelphia, read a paper on

THE PROPHYLAXIS OF PNEUMONIA.

A majority of those attacked by pneumonia, he said, are sufferers from chronic ailments, and the prevalence of cardiac and renal disease which has so greatly increased within the last two decades is largely dependant on changes which have occurred in the social conditions of the American people. Efficient prevention of pneumonia, therefore, must begin with a correction of the modes of life which tend to produce cardiovascular and renal degenerations. Important measures of prevention which are more immediately practicable include the more efficient ventilation of office buildings, factories, churches, theatres, courts of justice, public schools, steam and street railway cars, and living and sleeping rooms. Dust is the most prominent factor in the dissemination of the pneumococcus and other micro-organisms. The introduction of smooth asphalt pavements has undoubtedly been productive of clouds of dust hitherto unknown, and the automobile is the chief offender in stirring up the dust. It should be the duty of health boards to look after street cleaning and street sprinkling, and to them should be given full executive authority. No argument is necessary to show that this important work naturally forms a portion of the sanitary administration of our municipalities, since the requirements of the case can be properly carried out only by officials especially qualified. Sputum, being the principal source of infection, should be promptly disinfected and then destroyed by burning. Public health authorities should have power to enforce rules and regulations regarding pneumonia as in the case of other infectious and contagious diseases, and should also carry on a campaign of popular education. Measures must be in accord with intelligent public opinion before they can be rendered wholly efficient either by municipal or private authority.

DR. E. D. FISHER, New York, read a paper on

THE VALUE OF THE CORRECTION OF ERRORS OF REFRACTION IN PSYCHOSES,

in which he contended that so far as the cure of the disease was concerned the efficacy of such correction was almost *nil*. If errors of refraction were present, they should be corrected if necessary, but experience had shown that the cause of the disease was thereby very little, if at all, affected. It was unreasonable, he thought, that a disorder like epilepsy, for instance, could be efficiently treated by any such means.

DR. N. P. BARNES, Washington, read a paper on the

TREATMENT OF INCONTINENCE OF URINE IN CHILDREN.

The age at which the function of urination is made subject to the higher nerve centers, he said, is variable, and delay beyond the period of dentition indicates an abnormal condition, enuresis. Inherited weakness, intercurrent diseases, bad feeding, bad hygiene and lack of training may prolong this infantilism. Such children are usually, but not always, unhealthy. Enuresis generally persists from infancy, but it may appear after some exhausting disease. Many children have nocturnal enuresis with every indisposition, whatever its character. The condition is more common than is generally supposed, for it is only the continued cases which come under treatment. Careful inquiry in dispensary and asylum clinics has shown that 10% of the children seen at these institutions are bed-wetters. Since enuresis is a symptom of various disorders, and these disorders range from perverted dispositions to genuine nervous diseases, the success in treatment depends upon the determination of the etiological factors. The prescribing of drugs at random is as disappointing as unscientific. Having given an enumeration of the causes of enuresis, organic and functional, he went on to say that the multiplicity of these causes emphasizes the care to be exercised in the differentiation. Every avenue must be scanned, every organ and reflex carefully studied, and the urine and feces repeatedly examined. The majority of the cases yield to proper diet, hygiene and training. Mental and physical irritation should be reduced to a minimum, and a quiet, salubrious country place is desirable for the child's residence. Regular habits are imperative, and this applies not only to diet, exercise and sleep, but also to evacuation of the bowels and bladder. Medical treatment alone is usually negative unless the enuresis be due to highly acid or irritating urine, or infection and inflammation of the urinary mucosa. Then lithium salicylate, potassium citrate, hexamethylene tetramine, and similar drugs give prompt relief. In various conditions atropine, strychnine, quinine, iron and arsenic are useful. When masturbation is practiced, gelsemium, with or without sodium bromide, may be given, and circumcision is an excellent procedure.

DR. CARL BECK, New York, read a paper on

THE RECOGNITION AND TREATMENT OF PANCREATIC INFLAMMATIONS.

The symptoms of the light forms of acute pancreatitis, he said, resemble those of gastroduodenal catarrh so much, that differentiation with our present means is impossible. In its severer forms the sudden attack of pain in the epigastrium, nausea and collapse, followed shortly by circumscribed epigastric intumescence and associated with a rise of temperature, are regarded as pathognomic. The same applies to the subacute form, the collapse, however, being less marked. Chronic pancreatitis is either associated with chronic cholangioitis or cholelithiasis of the common duct or the hepatic ducts, or carcinoma of the liver or the pancreatic head. The therapy of all forms of pancreatitis is of a surgical nature. When the symptoms become marked, the destruction is generally so far advanced, that operative interference comes too late. In the early stages a definite diagnosis can but seldom be made, but if there be a suspicion, an exploratory aparotomy is indicated. The prompt discharge of bloody serum in the hemorrhagic form and of the pus in the suppurative type has saved a number of lives.

DR. DEFOREST WILLARD, Philadelphia, read a paper on the

MANAGEMENT OF INJURIES OF THE KNEE JOINT.

The subjects treated were: Sprains, laceration of ligaments, contusions, displacement of semilunar cartilages, loose bodies, penetrating wounds, results of effusions, hemorrhages into the joint, mechanical and operative measures for the varying conditions.

SATURDAY, MAY 6.

The following officers were elected: President, Carl Beck; New York, Vice-Presidents, J. N. Hall, Denver, and Robert Reyburn, Washington. N. P. Barnes was re-elected Secretary, and J. S. McLain, Treasurer. The next meeting is to be held in New York, in May, 1906.

Recent Literature.

The Student's Handbook of Surgical Operations. By Sir Frederick Treves, Bart., K.C.V.O., C.B., LL.D., F.R.C.S., Sergeant Surgeon-in-Ordinary to H. M. the King, Consulting Surgeon to the London Hospital. New edition. Revised by the Author and Jonathan Hutchinson, Jun., F.R.C.S., Surgeon to the London Hospital. With 121 illustrations. Abridged from the Author's "Manual of Operative Surgery." Chicago: W. T. Keener & Co. 1904.

This small handbook has been written to assist students in passing their final examinations and to do operations on the dead body. It is an abridgment of the author's "Manual of Operative Surgery." It certainly must be very convenient for students, but it does not contain sufficiently explicit directions to be valuable as an Operative Surgery. It would make an excellent ready reference book to recall the principal points to be considered in an operation. Some of the author's operations have, in the opinion of the reviewer, been replaced by better operations.

Unconscious Therapeutics; or the Personality of the Physician. By Alfred T. Schofield, M.D., M.R.C.S. Small 8vo. pp. xii, 317. Philadelphia: P. Blakiston's Son & Co. 1904.

The various forms of psycho-therapeutics — hypnotism, suggestion, and the like — receive little attention in this volume, which treats especially of the unconscious factors in healing which are derived from the personality of the physician himself; and the writer, with much emphasis and reiteration, urges that more stress be laid upon this factor in medical education. A suggestive chapter, which may be recommended to every physician, is written by a patient from her point of view, especially upon the consultant's waiting room. To many, of course, the book will seem trite and commonplace, even suggestive of the manual of etiquette, but in spite of too great diffuseness and repetition, it contains many useful suggestions and will repay perusal.

A Philosophy of Therapeutics. By Eldridge C. Price, M.D. Baltimore, Md.: Nunn & Co. 307 pages.

The author believes that the foundation of medical education is a knowledge of medical ethics. We should cure the patient and not the disease. Antipathy and homeopathy constitute two therapeutic principles; the former may be applicable in either acute or chronic conditions, the latter is most frequently applicable in acute conditions. Concerning the relation between drugs and the human organism, drugs do not act; it is the organism itself into which they may be introduced, which acts. This force, inherent in the organism, upon which their effect depends, is the all-important *vis medicatrix naturæ*. In the administration of drugs, a correct diagnosis is the most important aid, but is not absolutely indispensable to successful therapeutics. The best the physician can do is to "cover" the majority of the patient's pathological manifestations. Alternation of drugs should be avoided, if possible. In the study of drug effects, a standard dosage should be adopted.

The author's attempt to outline the underlying principles, upon which therapeutics is based, and his effort to systematize them into laws for the guidance of practice are of interest to the philosopher. The data for such laws is very uncertain, largely unproved and, as yet, also incapable of proof. A diversion of medical attention from the importance of diagnosis for successful treatment, we regard as a step backward rather than forward in medical therapeutics. We do not believe that therapeutics can ever be successful until it concerns itself primarily with the eradication of the cause of the patient's disease.

Bacteriology and Surgical Technic for Nurses. By Emily M. A. Stoney, Superintendent of the Training School for Nurses, St. Anthony's Hospital, Rock Island, Ill.; author of "Practical Points in Nursing," "Practical Materia Medica for Nurses," etc. Second edition. Thoroughly revised and enlarged. By Frederic Richardson Griffith, M.D. (Univ. of Penn.), of New York, Surgeon, Fellow of the New York Academy of Medicine. Illustrated. Philadelphia, New York, London: W. B. Saunders & Co. 1905.

This is a very good handbook of bacteriology and surgical technique for nurses. The illustrations are old and conventional. The subject of bacteriology and antisepsis is fairly well presented, yet the more recent work of Harrington regarding the value of antisepsis is not mentioned. The surgical technique is very good and the care of the patient after operation is excellent. An excellent glossary is appended, and on the whole the book makes a satisfactory textbook of the subjects of which it treats.

The Diseases of Society. (The Vice and Crime Problem.) By G. Frank Lydston, M.D. Small 8vo, pp. 626. With 184 illustrations. Philadelphia and London: J. B. Lippincott Company. 1904.

A number of years ago the author of the present volume was the joint author of a valuable study of the skulls of certain criminals. A similar study, with a large collection of portraits of criminals, is to be found in the present volume. The rest of the volume deals with the various social problems of vice and crime, with degeneracy and genius, and the causes and remedies for the various social evils. The author confesses that his views are radical and perhaps pessimistic. Such views may be warranted, but his data seem too untrustworthy to warrant any views. They seem collected from all sorts of sources, many of which are of doubtful value. The phrenology of Gall and the sexual functions of the cerebellum win considerable credence. The hysterical note of over emphasis is dominant. The book is entertaining, in parts, but it is popular science *à la* Hearst.

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DEATHS OF NOTABLE PHYSICIANS.

IT is a somewhat noteworthy fact that within the last few weeks the deaths of four distinguished physicians have been announced. We refer to Professor Nothnagel, Professor von Mikulicz, Professor Wernicke, and, in this country, Prof. E. S. Wood. These men have all died while still active in their professional work and giving promise of much accomplishment in the future. They represented also diverse fields in medicine, so that the entire medical profession will be the poorer for their deaths.

Professor Nothnagel died in the midst of a work which, if he had attempted no other, would have rendered his service to medicine memorable. The system of clinical medicine, which has been coming out for some years under his editorship, and which is gradually being translated into English, represents the very best work in medicine that Germany is now producing. We have no doubt that the series will be continued to its end without marked deviation from the plan originally outlined. It is to be regretted, however, that Nothnagel himself did not live to see the completion of so monumental a work, which bids fair to retain its place as the leading system of medicine in any language for many years to come. In Nothnagel's death medicine loses a clinician of the best type, whose contributions to medicine through a long period of usefulness have been constant and significant.

The death of Professor von Mikulicz in the very prime of life, and during the period of his greatest activity, is peculiarly unfortunate to the medical community in which he lived and to the world at large, which looked forward to still further contributions from his already prolific pen. That he should have died of a carcinoma of the stomach so situated that it had undoubtedly existed for many months before being discovered by him was peculiarly lamentable in view of his many notable contributions to the surgery of this region. It is reported that, after the recognition of his disease, and even after an exploratory operation proving its fatality had been attempted, he again undertook the work in his clinic and performed many operations with his own hands. Surgery everywhere loses much in the death of this really remarkable man, whose accomplishment at the age of fifty-five would have done ample credit to a life extending over many more years.

Professor Wernicke, representing a wholly different line of medical research, will also leave a place which is hard to fill. He has long represented much that was best in psychiatry and neurology, and, although in some respects a disappointed man in the attainment of his ambitions, he nevertheless leaves a body of work behind him which will long remain valuable to the special students of the subjects which he represented and to the broader field of generally cultivated physicians.

Finally, the death of Prof. E. S. Wood, although for some months not unexpected, comes as a peculiar blow to this community, as well as to the wider field in which his admirable work is known. During his long identification with the Harvard Medical School, he had held a position of absolute respect in the estimation of his colleagues, and, what is perhaps even more significant, in that of each succeeding class of students which he taught. His unquestioned fairness and his geniality, qualities which he possessed in most unusual degree, won him friends which few men have had to equal extent. His wider service to the State naturally brought him into contact with many persons outside of his immediate profession, and here also he represented the best, both as an individual and as the representative of a system. His thoroughness in examination, his astuteness in drawing conclusions, and his absolute fairness in the presentation of facts rendered him a medical expert of whom not only the medical profession, but the legal profession as well, may take a just pride. Had death not overtaken him, Dr. Wood also would undoubtedly have continued his work for many years to come. Like von Mikulicz, he was at the height of his powers when the same disease cut short his work. He will be universally mourned by

all those with whom he came in contact, not only as a physician of high standing, but also as a man of deep feeling and broad sympathies, the range of whose influence extended far beyond the field in medicine which he had made peculiarly his own.

It is idle to say that the places of such men as these may easily be filled. No doubt there are other men to undertake the work where it has been left, but the peculiar personality which enters into the investigation of the man who has attained a high position in science cannot be assumed by others, however gifted. This personal quality is wholly lost, however completely the details of the work which has been begun may be carried on. It is this factor which we regret, and which too often is overlooked in our easy-going assumption that there are always others to fill the places of those who have gone before. We have no question that the department of study which each of these great men represented will find no permanent check in their decease, but it is still more apparent that the peculiar personal attributes which each brought to his chosen subject can never be replaced. However much the science of medicine may have gained from the lives of such men, it has also lost much.

THE MEETING OF THE AMERICAN MEDICAL ASSOCIATION.

It is evident that the recently concluded meeting of The American Medical Association has proved a complete success, on both its educational and social sides. The experiment, if such it may be called, of holding this great medical meeting at so distant a city as Portland, Ore., has been amply justified by the attendance and by the character of the work presented. If, in addition to its other services, The American Medical Association meetings may be so arranged as to lead physicians, who ordinarily travel little, to distant parts of the country, it will have accomplished a far-reaching benefit. The ordinary physician is not a wide traveler; his horizon is too apt to be narrowed down to the community in which he practises, or at least to the section of the country in which he lives. To travel a thousand or more miles to a medical meeting is, no doubt, a liberal education in itself quite apart from the mental pabulum offered at its completion. Without disrespect to the section meetings, we have no hesitation in saying that the effort of going to the far West, with the different points of view which such a journey necessitates, has been of equal value to many hard-worked and closely-confined physicians. Portland was a peculiarly fortunate city to choose on this account in that it represents a region of the country little known to the ordinary man, and one which combines a charm of climate with scenery which should in itself be an education.

On its scientific side the meeting seems also to have been one which will long be remembered. The sections on surgery and general medicine appear to have been most liberally attended, and, especially in the medical section, the contributions were so arranged as to epitomize progress rather than to relate personal experience. Such an arrangement could not fail to be of great educational value. Many matters of wide general interest were discussed in the various sections, among others the patent medicine evil, which has more than a merely medical interest. In general, it must certainly be said of this meeting that it represented on the broadest and most democratic scale the best in American medicine. The Association as now organized should certainly receive the support of every physician eligible to its membership in order to fill completely its place as a representative organization. Nearly two thousand members were present, and the fact that more non-members than usual attended the sessions should augur well for an increased membership.

THE PHYSICIAN AND THE COMMUNITY.

On July 13 the twenty-second annual meeting of the Associated Physicians of Long Island, of which Dr. William B. Savage of Islip is president, was held at Oyster Bay. More than three hundred members were in attendance, most of them coming by a special train, starting from Brooklyn and stopping at various stations along the road. The exercises were held in the high-school building, and a special feature of the occasion was an address by President Roosevelt, who drove in from his country home. He said many pleasant things in praise of the medical profession, of which the following may be taken as a sample: "Of course, it is almost needless to say that there is not and cannot be any other lay profession the members of which occupy such a dual position, each side of which is of such importance. For the doctor has, on the one hand, to be the most thoroughly educated man in applied science that there is in the community, and, on the other hand (as every layman knows, and as doubtless many a layman in the circle of

acquaintance of each of you would gladly testify), the doctor gradually becomes the closest friend to more different people than would be possible in any other profession. The feelings which a man has toward the one human being to whom he turns, either in time of sickness for himself, or, what is far more important, in the time of sickness of those closest and dearest to him, cannot but be of a peculiar kind. He cannot but have a feeling for him such as he has for no other man." In the course of his remarks, he also took occasion to speak in warm praise of General Wood. "One of the most important items of the work done by our Government in Cuba," he said, "was the work of hygiene, the work of cleaning and disinfecting the cities, so as to minimize the chance of yellow fever, so as to do away with as many as possible of the conditions that told for disease. This country has never had done for it better work, that is, work which reflected more honor upon the country, or for humanity at large, than the work done for it in Cuba. And the man who above all others was responsible for doing that work so well as a member of your profession, who, when the call to arms came, went as a soldier to the field, was the present Major-Gen. Leonard Wood." Both President Roosevelt and General Wood were elected honorary members of the Association.

President Roosevelt has of late on more than one occasion taken the opportunity to express his opinion regarding the work of the physician in the community. Not long since, in connection with the exercises attending the graduation of students from the United States Medical School at Washington, the President showed a keen appreciation, both of the need of the military branches of the government for good physicians and also of the opportunity which such positions offered. On that occasion also he spoke with his customary vigor of the failure of the medical service during the war with Spain, and placed the blame for such failure where it justly belongs. We are glad to make note of his recent remarks at Oyster Bay, which still further express his convictions regarding the place of the physician in society and his relation to the affairs of the community and to the country at large. No doubt the time is coming in this country when physicians will take a more active part in matters which do not immediately concern their profession. The plea which we have recently heard vigorously expressed at the last meeting of The Massachusetts Medical Society that physicians should enter into politics, at least for the purpose of carrying through the reforms in which they are so keenly interested in their professional work, finds a certain support in the generous recognition of medical work by those in high government positions. We have no doubt that with the expansion of medicine and the continued demonstration of its close relationship to civic affairs much will be done toward placing the physician in a less isolated position with regard to the community.

MEDICAL NOTES.

CIRCULAR ON TUBERCULOSIS. — The fifth revised edition of a small pamphlet on the cause and prevention of consumption, issued by the Illinois State Board of Health, has just been published. We have hitherto commented on the energetic work of this Board of Health, and the fact that it has succeeded in distributing four editions of its pamphlet intended for the laity is indicative of the widespread interest which its campaign has aroused.

A NEW MEDICAL JOURNAL. — A new medical journal, with the comprehensive title, "Surgery, Gynecology, and Obstetrics," has appeared this month in Chicago under the editorial management of several of the city's leading physicians. The first number contains papers on surgical matters and is accompanied by editorial comment, reports of societies and abstracts of current literature. The title of the new journal is suggestive of the recognition of the practical identity of surgery and gynecology.

MORTALITY OF MICHIGAN DURING JUNE, 1905. — The total number of deaths returned to the Department of State for the month of June was 2,394, a decrease of 306 from May. The death-rate was 11.4 per 1,000 population, as compared with 12.5 for the preceding month. By ages there were 396 deaths of infants under one year, 121 deaths of children aged one to four years, and 700 deaths of elderly persons aged sixty-five years and over. There were 14 deaths from smallpox and 4 deaths reported from tetanus.

DEATH OF DR. A. P. DUDLEY. The death of Dr. A. P. Dudley is announced. Dr. Dudley was abroad and his death occurred in Liverpool, July 15. For many years Dr. Dudley has been intimately associated with the practice of gynecology and has held a professorship in that department of medicine in the New York Post-Graduate Hospital. In spite of indications of failing health, he had gone abroad as a delegate

to the International Congress, meeting in St. Petersburg in August. Dr. Dudley was also connected with the medical department of the University of Vermont. His contributions to medical literature have been numerous.

Revision of the United States Pharmacopeia, 1900–1910. — The following changes in the Pharmacopeia will officially go into effect Sept. 1, 1905:

The strength of tincture of aconite has been reduced from 35% to 10%, and that of tincture of veratrum from 40% to 10%. The strength of tincture of strophanthus has been increased from 5% to 10%. These changes have been made in order to conform to the standards adopted by the International Conference on Potent Remedies held at Brussels, in September, 1902, the object being to make uniform the strength of potent remedies in all parts of the world.

National Association for the Study of Epilepsy. — It is announced that the next meeting of this Association will be held in New York in November of this year. Circulars have been sent out by the executive committee urging that reports on the subject from different countries and from the various states of the Union be provided for this meeting. Any fact connected with the subject of epilepsy will be welcome, however commonplace it may appear. In addition to this request a set form is being circulated with questions regarding various matters connected with epilepsy. It is requested that these questions be answered and the blanks returned before the first of September. We have no doubt that this association is already doing a most valuable work in studying the problem of epilepsy, and it is evident that the complete cooperation of physicians, indirectly interested in the question, will do much toward solving the problems involved.

Ravages of the Heat. — The suffering occasioned by the heat is demonstrated by the following statistics of deaths and prostrations as its result. In Boston there were last Tuesday 12 prostrations and 3 deaths; in New York 190 prostrations and 26 deaths; in Philadelphia 50 prostrations and 5 deaths; in Pittsburg 45 prostrations and 13 deaths; and in Chicago 17 prostrations and 4 deaths. The thermometer registered well over 90 degrees in many of the cities and towns of New England and the West.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, July 19, 1905, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 30, scarlatina 10, typhoid fever 10, measles 23, tuberculosis 46, smallpox 0.

The death-rate of the reported deaths for the week ending July 19, 1905, was 17.83.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, July 15, 1905, was 201, against 142 the corresponding week of last year, showing an increase of 59 deaths, and making the death-rate for the week 17.07. Of this number 116 were males and 85 were females; 194 were white and 7 colored; 121 were born in the United States, 77 in foreign countries, and 3 unknown; 42 were of American parentage, 129 of foreign parentage, and 30 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 28 cases and 3 deaths; scarlatina, 11 cases and no deaths; typhoid fever, 9 cases and no deaths; measles, 29 cases and 2 deaths; tuberculosis, 40 cases and 19 deaths; smallpox, no cases and no deaths. The deaths from pneumonia were 16, whooping cough 0, heart disease 7, bronchitis 2, and marasmus 5. There were 24 deaths from violent causes. The number of children who died under one year was 41; the number under five years, 60. The number of persons who died over sixty years of age was 37. The deaths in public institutions were 83.

Cases of cerebrospinal meningitis reported for the week were 2 and 2 deaths.

Registration of Dentists. — Of 111 applicants, who have recently applied for registration in dentistry, 66 have passed the required examinations. These examinations cover a period of five days, and candidates are tested in practical efficiency as well as in theoretical knowledge.

Division of Surgery, Harvard Medical School. — Bulletin No. 4 of the Division of Surgery of the Harvard University has recently appeared. It contains articles of importance on matters relating to the surgery of the stomach and a well illustrated paper on arthritis deformans.

Work of the Camp for Tuberculosis. — The camp for tuberculosis, upon which we commented editorially in our last issue, has been in operation for about two weeks, and about fifty

persons have offered themselves for examination. It is naturally as yet too soon to speak of results, but it is already evident that the experiment is likely to prove popular with the patients and a success from a medical standpoint. A general gain in weight among the patients has already been noted.

ORGANIZATION OF CITY PHYSICIANS. — Temporary organization of the Massachusetts Association of City Physicians was accomplished July 18 in Boston. Officers were elected and a paper was read by Dr. H. E. Marion on the Medical Inspection of Schools which was discussed by Dr. H. L. Chase of Brookline and others. The object of the association is to bring together city physicians in various parts of the state for the discussion of the special problems which arise in the course of their professional work.

SITE OF A LEPROSARIUM. — It is understood that the Island of Penikese in Buzzards Bay has been purchased through the State Board of Charity as a site for a leper hospital in this state, the purchase price being $25,000. Governor Douglas is said to approve the selection, and it is difficult to see how any just objection to its use can be raised except on purely sentimental grounds. It is extremely unlikely that such an institution will for a long time to come have more than three or four patients, and, with our present knowledge of the disease, it cannot in any sense be considered a menace to the health of the neighboring communities. Other things being equal, an island is a desirable site for such an institution.

NEW YORK.

OPENING OF VACATION SCHOOLS AND PLAYGROUNDS. — On July 10, the vacation schools and playgrounds in all the five boroughs of the city were opened under the auspices of the Board of Education. In connection with many of them are free baths, the children being required to furnish only soap and towels. The reports of registrations indicate that the attendance will be much larger than ever before, and at the playgrounds it will probably amount to nearly 2,000,000. Last year the aggregate attendance at vacation schools in the different boroughs was as follows: Manhattan, 15,389; the Bronx, 840; Brooklyn, 14,247; Queens, 1,609. In Richmond (Staten Island) there are no such schools.

APPOINTMENT OF DR. SAMUEL T. ARMSTRONG AS SUPERINTENDENT OF BELLEVUE HOSPITAL. — Dr. Samuel T. Armstrong was appointed superintendent of Bellevue Hospital on July 13. After his graduation from the St. Louis Medical College in 1879, Dr. Armstrong entered the U. S. Marine Hospital service. Later he was visiting physician to the city hospitals for contagious diseases, the Willard Parker Hospital, and the Riverside Hospital on North Brother Island. During the Spanish-American war he was an army surgeon, and from 1898 to 1900 was in charge of the medical department at Puerto Principe, Cuba, as a brigade surgeon. After the war he held a similar post in the Philippines. As an applicant for the position of superintendent of Bellevue, Dr. Armstrong headed an eligible list of sixteen. Michael Ricard, a layman, who has been acting superintendent since Dr. Mabon resigned, several months ago, retains his old place as assistant superintendent, an office which he has filled acceptably for more than twenty years.

A BULLET WOUND OF THE HEART. — A remarkable case is reported from St. Vincent's Hospital, Livingston, Borough of Richmond (Staten Island), which is a branch of the hospital of the same name in Manhattan. On July 4, Henry Nowak, while on the Staten Island ferry-boat, was accidentally shot in the breast with a pistol. The wound was directly over the heart, and it was thought at first the man would not live to reach the Island. He rallied, however, and at the hospital cautious probing indicated that the bullet had entered the heart. An x-ray apparatus was then employed, when it was clearly demonstrated that the ball had passed entirely through the heart (what portion of the organ is not stated), and was lodged in the lung. This observation by the surgeons in charge, Drs. Brady and Rossford, was confirmed by a number of other medical men. According to the latest reports the patient was still living, and appeared to have a fair chance of recovery.

SUCCESSFUL GASTRO-ENTEROSTOMY IN A CHILD OF THREE MONTHS. — Dr. John Rogers, one of the attending surgeons to the Gouverneur Hospital, has recently done a successful posterior gastro-enterostomy for pyloric obstruction, the remarkable feature of which was that the patient was an infant only three months old. The case was one in private practice, and was seen in consultation with Dr. John Howland. From birth the

child, which was nursed by its mother, had ejected a considerable amount of milk (sometimes with extraordinary force), and when about two months old it began to vomit all food after natural nursing. Artificial feeding, though at first apparently beneficial, soon failed in spite of every modification, supplemented by lavage. Finally, there were one or two vomitings of considerably greater quantity than the last feeding; and this was regarded as a suspicious sign. After emaciation had become marked, peristaltic stomach waves were readily recognized and with a six-hour interval after feeding the gastric washing showed almost the same amount of food as had been last given. No tumor whatever was to be found. The bowels were markedly constipated, and enemata brought away only a trace of fecal matter. The weight of the infant, which had been fully ten pounds at birth, was now 7¼ pounds. The diagnosis of pyloric obstruction was made, and an operation was undertaken on June 30. Ether anesthesia was given, and a median epigastric incision revealed a dense, thick pylorus, feeling to the touch like one which had been the subject in an adult of a cicatricial deformity. The pylorus was about as large and firm as the end phalanx of an adult thumb. The stomach, which was found to be slightly enlarged, was, together with the transverse colon, turned out on the thorax, after which a Czerney-Peterson posterior gastro-enterostomy was performed, without a loop, by suture. The fistula in the jejunum was located about 1½ inches from the duodeno-jejunal fold. A special Murphy button loaned by Dr. Willy Meyer, which had been made for such an operation, was judged too large, although it was barely half the size of the smallest normal button, and it was, therefore, rejected. The time from the beginning of the narcosis to the final dressing was just thirty minutes, and the infant was in good condition at the close of the operation. The next day, however, the temperature went up to 103° and the pulse to 160. The attempt was made to give some Nestle's food, but it was quickly vomited, and practically nothing but water was taken until twenty-four hours after the operation. On the third day the temperature dropped to normal, where it remained, and feeding in increasing strength and quantity was successful. On July 12, the report was that the child had gained 1¾ pounds in eleven days, and that there was primary union throughout. The result in this difficult case is certainly one on which Dr. Rogers is to be warmly congratulated.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JULY 8, 1905.

Cities.	Population Estimated, 1904.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diphtheria and croup.	Diarrhœal Disease	Cerebro-spinal Meningitis.
New York	3,998,644	1,503	714	42.31	8.38	1.33	25.01	1.93
Chicago	1,986,730	420	113	30.00	6.19	.47	9.04	—
Philadelphia	1,467,963	466	183	18.67	4.29	1.71	1.50	—
St. Louis	633,606	—	—	—	—	—	—	—
Baltimore	542,239	264	127	44.32	4.92	.37	29.91	.37
Cleveland	444,251	—	—	—	—	—	—	—
Buffalo	409,645	—	—	—	—	—	—	—
Pittsburg	365,403	160	80	36.25	4.37	.62	18.75	.62
Cincinnati	358,577	—	—	—	—	—	—	—
Milwaukee	335,990	—	—	—	—	—	—	—
Washington	300,776	—	—	—	—	—	—	—
Providence	195,744	44	10	20.45	4.54	4.54	6.81	.23
Boston	617,890	193	57	22.95	8.30	.54	2.72	2.73
Worcester	136,925	37	15	32.43	—	—	21.51	8.10
Fall River	119,349	48	25	56.24	6.24	.20	50.00	—
Lowell	104,402	38	15	18.42	7.89	2.63	10.52	2.63
Cambridge	100,926	14	5	35.71	7.14	7.14	14.28	—
Lynn	78,875	20	6	15.00	—	—	—	5.00
Lawrence	71,243	24	9	61.09	8.33	—	16.67	2.78
Springfield	73,090	22	3	18.18	—	—	9.09	—
Somerville	70,413	17	1	5.88	5.88	—	5.88	—
New Bedford	68,863	20	6	30.00	5.00	—	20.00	—
Holyoke	50,589	16	9	37.50	6.25	6.25	—	6.25
Brockton	46,601	8	0	37.50	12.50	—	—	—
Haverhill	46,310	14	2	21.42	—	—	—	—
Newton	39,061	12	3	16.67	—	8.33	—	—
Salem	37,305	14	3	28.56	—	—	14.28	—
Malden	37,188	4	1	25.00	—	—	—	—
Chelsea	36,499	9	3	11.11	11.11	—	—	11.11
Fitchburg	32,325	12	1	25.00	16.67	—	—	—
Taunton	34,577	13	4	15.40	—	—	15.40	—
Everett	33,369	4	1	25.00	—	—	—	—
North Adams	22,301	4	1	50.00	25.00	50.00	—	—
Gloucester	26,708	—	—	—	—	—	—	—
Quincy	25,121	5	1	20.00	—	—	20.00	—
Waltham	25,797	10	1	30.00	—	—	—	—
Brookline	23,876	5	—	—	20.00	—	—	—
Pittsfield	23,670	0	—	—	—	—	—	—
Chicopee	21,268	5	5	20.00	—	—	—	—
Medford	21,262	1	—	—	—	—	—	—
Northampton	20,514	6	1	16.67	—	16.67	—	—
Beverly	15,807	4	2	—	—	—	—	—
Clinton	15,711	3	0	—	—	—	—	—
Leominster	15,494	—	—	—	—	—	—	—
Newburyport	14,745	5	1	—	40.00	—	—	—
Woburn	14,561	—	—	—	—	—	—	—
Hyde Park	14,509	1	1	100.00	—	—	100.00	—
Adams	14,478	—	—	—	—	—	—	—
Attleboro	14,315	—	—	—	—	—	—	—
Marlboro	13,819	4	1	25.00	—	—	—	—
Melrose	13,809	2	0	50.00	—	—	—	—
Westfield	13,771	0	—	—	—	—	—	—
Milford	13,609	—	—	—	—	—	—	—
Revere	13,609	2	—	—	—	—	—	—
Framingham	13,974	—	—	—	—	—	—	—
Peabody	13,408	—	—	—	—	—	—	—
Gardner	13,284	4	2	—	—	—	—	—
Weymouth	11,716	2	0	—	—	—	—	—
Southbridge	11,575	4	3	25.00	25.00	—	—	—
Watertown	11,389	0	—	—	—	—	—	—
Plymouth	11,139	—	—	—	—	—	—	—

Deaths reported, 3,469; under five years of age, 1,415; principal infectious diseases (smallpox, measles, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 1,199; acute lung diseases 231, consumption 376, scarlet fever 6, whooping cough 28, cerebrospinal meningitis 45, smallpox 4, erysipelas 4, puerperal fever 12, measles 28, typhoid fever 45, diarrheal diseases 602, diphtheria and croup 43.

From whooping cough, New York 8, Chicago 9, Philadelphia 2, Baltimore 2, Pittsburg 7. From scarlet fever, Chicago 1, Philadelphia 1, Pittsburg 3, Lawrence 1. From cerebro-spinal meningitis, New York 29, Baltimore 1, Pittsburg 1, Providence 1, Boston 5, Worcester 3, Lowell, Lynn, Lawrence, Holyoke and Chelsea 1 each. From erysipelas, New York, Chicago, Philadelphia and Boston, 1 each. From smallpox, Chicago 4.

In the seventy-six great towns of England and Wales, with an estimated population of 15,609,377, for the week ending July 1, 1905, the death-rate was 12.7. Deaths reported 3,793; acute diseases of the respiratory organs (London) 46, whooping cough 73, diphtheria 32, measles 190, smallpox 1, scarlet fever 39.

The death-rate ranged from 6.8 in Willesden, Hornsey, Leyton and Handsworth to 23.9 in Stockton-on-Tees; London 13.0, West Ham 7.6, Brighton 9.8, Southampton 14.1, Plymouth

17.1, Bristol 11.9, Birmingham 12.4, Leicester 9.4, Nottingham 12.8, Birkenhead 14.8, Liverpool 16.5, Wigan 18.1, Bolton 9.7, Manchester 15.9, Salford 16.2, Halifax 13.9, Bradford 11.3, Leeds 12.9, Hull 11.7, Sheffield 15.5, Newcastle-on-Tyne 15.2, Cardiff 8.7, Rhondda 13.8, Merthyr Tydfil 19.1, Oldham 13.8.

METEOROLOGICAL RECORD.

For the week ending July 8, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

DATE	Barometer.	Thermometer.			Relative humidity.			Direction of wind.		Velocity of wind.		We'th'r *		Rainfall in inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A.M.	8.00 P.M.	Daily mean.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	
S. 2	29.98	68	72	65	76	88	82	S	S W	14	15	O.	O.	.11
M. 3	29.93	68	72	65	81	76	78	N E	E	8	2	O.	C.	.11
T. 4	30.02	76	85	67	60	54	57	N W	S W	8	5	C.	C.	0
W. 5	30.12	72	80	65	73	74	74	S E	S W	3	12	C.	O.	0
T. 6	30.02	71	78	64	88	74	79	S	S	8	7	O.	C.	0
F. 7	30.05	73	84	62	87	82	84	W	S W	11	15	O.	C.	0
S. 8	29.96	77	89	65	89	79	81	S W	S W	4	14	C.	O.	0
☞	30.01		80	65			76							.22

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Means for the week.

OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE

FOR THE SEVEN DAYS ENDING JULY 5, 1905.

BLUE, RUPERT, passed assistant surgeon. Granted extension of leave of absence for seven days. July 5, 1905.

CURRIE, D. H., passed assistant surgeon. Granted leave of absence for two months from July 6. July 1, 1905.

BEAN, L. C., acting assistant surgeon. Granted leave of absence for twenty days from July 1. July 3, 1905.

SMYTH, F. R., acting assistant surgeon. Granted leave of absence for twenty days from July 10. June 29, 1905.

THOMAS, J. G., acting assistant surgeon. Granted leave of absence for thirty days from July 1. July 1, 1905.

FOR THE SEVEN DAYS ENDING JULY 12, 1905.

IRWIN, FAIRFAX, surgeon. Granted leave of absence for one month from August 8. July 12, 1905.

SPRAGUE, E. K., passed assistant surgeon. Leave of absence for one month from June 27, 1905, granted Passed Assistant Surgeon Sprague by Bureau letter of June 10, amended so that said leave shall be effective from July 5. July 7, 1905.

PARKER, H. B., passed assistant surgeon. Granted leave of absence for ten days from June 16, on account of sickness. July 7, 1905.

AMESSE, J. W., passed assistant surgeon. Granted leave of absence for three days from July 11. July 10, 1905.

EARLE, B. H., assistant surgeon. Bureau telegram granting Assistant Surgeon Earle leave of absence for seven days from June 25, amended so that said leave shall be effective from June 27. July 12, 1905.

STIMSON, A. M., assistant surgeon. Granted leave of absence for one month and fourteen days from July 21. July 10, 1905.

RUCKER, W. C., assistant surgeon. Granted leave of absence for seven days from July 6, 1905, under paragraph 191 of the regulations.

COLLINS, G. L., assistant surgeon. Granted leave of absence for four days from July 5, 1905, under paragraph 191 of the regulations.

FROST, W. H., assistant surgeon. Granted leave of absence for two days from June 24, under paragraph 191 of the regulations.

BAILEY, C. W., acting assistant surgeon. Granted leave of absence for seven days from July 12. July 11, 1905.

RICHARDSON, N. D., acting assistant surgeon. Granted leave of absence for five days, under paragraph 210 of the regulations.

SINCLAIR, A. N., acting assistant surgeon. Granted leave of absence for thirty days from July 8. July 10, 1905.

ACHENBACH, J., pharmacist. Relieved from duty at the marine hospital, Port Townsend, Wash., and directed to report to the Medical Officer in Command of the Port Townsend quarantine station for duty. July 7, 1905.

GIBSON, F. L., pharmacist. To proceed to Portland, Ore., for duty in connection with the Service exhibit at the Lewis and Clark Exposition. July 11, 1905.

TROXLER, R. F., pharmacist. Relieved from duty at the Port Townsend quarantine station, and assigned to duty at the marine hospital, Port Townsend, Wash., effective May 10. July 7, 1905.

BOARDS CONVENED.

Board convened to meet at Key West, Fla., July 7, 1905, for the physical examination of an officer of the Revenue-Cutter Service. Detail for the Board: Surgeon C. E. Banks, chairman; Acting Assistant Surgeon S. D. W. Light, recorder.

Board convened to meet in Washington, D.C., July 12, 1905, for the consideration of examination papers of Assistant Surgeons B. H. Earle, M. W. Glover, and C. C. Pierce, to determine their fitness for promotion to the grade of passed assistant surgeon. Detail for the Board: Assistant Surgeon-General J. M. Eager, chairman; Passed Assistant Surgeon Jos. Goldberger: Assistant Surgeon J. W. Trask, recorder.

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING JULY 15, 1905.

R. P. RICHARDSON, passed assistant surgeon. Commissioned passed assistant surgeon, with rank of lieutenant, from May 16, 1904.

A. M. FAUNTLEROY, passed assistant surgeon. Commissioned passed assistant surgeon, with rank of lieutenant, from September 29, 1904.

R. L. SUTTON, assistant surgeon, having been examined by a retiring board and found incapacitated for active service on account of disability incident thereto, is retired from active service, June 30, 1905, in accordance with the provisions of Section 1453, Revised Statutes.

J. H. PAYNE, passed assistant surgeon. Detached from the "Pennsylvania" and ordered to the "Nashville."

G. M. MAYERS, assistant surgeon. Ordered to the Naval Training Station, Newport, R. I., with additional duty on the "Constellation."

D. C. CATHER, assistant surgeon. Detached from the Naval Training Station, Newport, R. I., and ordered to the "Pennsylvania."

J. B. MEARS, acting assistant surgeon. Ordered to duty with the Torpedo Flotilla of the Coast Squadron.

X. CHINNSORG, passed assistant surgeon. Ordered to the "Mayflower."

E. THOMPSON, surgeon. Detached from the "Des Moines" and ordered home to wait orders.

R. E. HOYT, assistant surgeon. Ordered to the Naval Academy.

F. T. GORDON, pharmacist. Detached from the Naval Dispensary, Washington, D. C., and ordered home to wait orders, after discharge from treatment at the Naval Hospital.

RECENT DEATHS.

GEORGE B. LOCKWOOD, M.D., M.M.S.S., of Sharon, died July 12, at Albuquerque, N. M., whence he had gone because of ill health. Dr. Lockwood was at one time the assistant physician at the Medfield Insane Asylum. He was but thirty-one years old at the time of his death.

EDWARD STICKNEY WOOD, M.D., M.M.S.S., of Boston, died July 11, 1905, aged fifty-nine years.

CHARLES EDWIN PARKER, M.D., M.M.S.S., died in Princeton July 10, 1905, aged forty-one years.

DR. PAUL E. HEUSER, of Brooklyn, died on July 10, at the age of eighty-one years. He was born in Germany, and practised there for forty years before coming to this country.

BOOKS AND PAMPHLETS RECEIVED.

On the Treatment of Gonorrhœa. By Ferd. C. Valentine, M.D., and Terry M. Townsend, M.D. Reprint.

A Laboratory Guide in Bacteriology. For the Use of Students, Teachers and Practitioners. By Paul G. Heinemann, Sc.B. Illustrated. Chicago: The University of Chicago Press. 1905.

Dysentery, with Special Reference to its Bacillary Form. By Joseph J. Kinyoun, M.D. Reprint.

Address.

THE SURGEON AND THE PATHOLOGIST. A PLEA FOR RECIPROCITY AS ILLUSTRATED BY THE CONSIDERATION OF THE CLASSIFICATION AND TREATMENT OF BENIGN TUMORS OF THE BREAST.*

BY J. COLLINS WARREN, M.D., BOSTON.

SYNOPSIS.

1. INTRODUCTION: Subject of paper. Confusion of nomenclature. [National and local differences. Differences between clinician and pathologist. Need of co-operation. Clearing house.
2. MATERIAL: 658 consecutive cases of chronic disease of breast in M. G. H.; 100 cases from private practice (70 diagnoses in 199 cases of benign breast tumor in M. G. H.).
3. CLASSIFICATION: Normal anatomy of breast. Relation to tumors and diseases. Classification offered. Variation from other classifications.
4. CARCINOMA: 517 cases. Proportion to other tumors, 68 % (70% M. G. H.) (58 % J. C. W.). Varieties. Age incidence. Occurrence with or resulting from benign tumors and diseases, as Involution, papillary cyst adenoma, periductal fibroma, Paget's disease.
5. FIBRO-EPITHELIAL TUMORS: Fibrous Group. Periductal tumors. Fibroma, myxoma, sarcoma. Frequency. Pathology. Clinical symptoms. Diagnosis. Course. Prognosis. Treatment.
6. FIBRO-EPITHELIAL TUMORS: Epithelial group. Cyst adenoma. Fibro-Cyst-Adenoma: Rare. Epithelial exaggeration of periductal fibroma. Pathologic symptoms. Treatment. Papillary Cyst-Adenoma: Pathology. Symptoms. Prognosis. Treatment.
7. HYPERPLASIA. DIFFUSE HYPERTROPHY: (2) Varieties. Rare. Relation to pregnancy and to genital abnormalities. Pathology. Symptoms. Treatment.
8. HYPERPLASIA. ABNORMAL INVOLUTION. "Chronic Cystic Disease." Historical. Synonyms. Pathology. Cystic and proliferative. Types of proliferation. Symptoms. Course untreated. Prognosis. Treatment.
9. CHRONIC INFLAMMATION: Chronic abscess. Ductal mastitis. Relation to lactation. Symptoms. Course. Pathology and Treatment. Galactocele.
10. SINGLE RETENTION CYST: Mechancial origin. Rarity. Symptoms. Confusion with abnormal involution.
11. NON-INDIGENOUS TUMORS OF BREAST: Sarcoma. "Solid sarcoma." Rare. No relation to breast. Symptoms. Diagnosis. Treatment. Lipoma. Retro-mammary. Symptoms and treatment. Lymphangioma.
12. SUPERNUMERARY BREASTS: Occurrence. Situation. Tendency to tumor formation.
13. TREATMENT of benign tumors of the breast. "Plastic resection." Indications. Method. Results.

IN selecting a subject in a special department of medicine which should be of interest to the great body of members of this Association, it has occurred to me that the discussion of the diseases of the mammary gland would be appropriate, as the classification of the diseases of this organ is at present in a more or less unsettled state, and the operative treatment of many of the benign lesions of the breast is a subject which is still open to discussion.

The great impetus which laboratory work has received in recent years in the various medical centers of this country is evidence that the interest taken in the scientific side of medicine has progressed steadily since the awakening of modern pathology in the middle of the last century. American physicians have proved themselves apt pupils, and the beginnings of the generation which is now passing off the stage have already borne fruit which one cannot regard otherwise than with satisfaction. The time has already arrived when we in this country are no longer content to receive the dicta of science at second hand, but feel quite competent to take the initiative on ourselves, as our many substantial contributions to medical science amply show. Indeed, I feel convinced that the very practical side of our national character is a most valuable quality in enabling us to unravel some of the more complicated questions which have been left unsolved by the foreign scientists. The laboratory workers' range of vision, however, is often at best but microscopic, and it is no wonder that, unaided, he sometimes misinterprets the changes rung by nature on some simple theme. Without the laboratory worker's aid, however, the clinician becomes swamped in a mass of clinical detail from which alone he has again and again been unable to extricate himself. There can be little question that the combination of energies which accomplishes most in surgical progress is that obtained by the co-operation of the laboratory investigator with the surgeon of clinical experience. Too long have these two departments of medicine conducted themselves independently and, as I feel, greatly to the disadvantage of them both. The clinician and the laboratory man, however, in these days of specialism seem sometimes in danger of drifting even farther apart, and we find some of the modern problems sadly in need of a pathologic "clearing-house" to put things on a more practical basis. This, it seems to me, is the moral which must be read between the lines of the paper which I have the honor to present to you this evening.

In no department of surgery has the classification of the diseases of an organ or the pathologic nomenclature been more confusing than in the case of the diseases of the mammary gland. Not only has the nomenclature of the diseases of the breast been subject to that continual revision to which all medical terms are liable with advancing knowledge, but in this case national and even local systems have added again to the confusion. The French school, the German, the English, and the American schools of medicine rarely agree in their description of any tumor of the breast other than carcinoma, and in the case of the inflammatory or involution changes of the breast the variations in nomenclature are notorious. In view of the always horrible possibility of cancer, however, no woman can regard a lump of any size, shape, or consistency in the breast with equanimity, and in no organ does the presence of disease in its earlier stages furnish fewer data for accurate diagnosis. The cry for aid and comfort is always an urgent

*Oration on Surgery at the Fifty-sixth Annual Session of the American Medical Association, Portland, Ore., July 11-14, 1905. Published through the courtesy of the *Journal of the American Medical Association*.

one, and it behooves the surgeon, therefore, and the general practitioner as well, to be in a position to meet the demand for accurate information with an intelligent and harmonious reply. Such a statement can be furnished only by bringing the modern views of the pathology of these diseases into focus with the clinical pictures which they present. In the hope that I may pave the way for the clinician and the pathologist to "get together" and to put the classification of diseases of the breast on a more intelligible and practicable foundation, I have selected this field of surgery for your consideration.

The material which has served as a basis of this investigation includes, in all, 758 cases of diseases of the breast; 658 cases were taken from the records of the Massachusetts General Hospital.[1] The diseases of the male breast were purposely omitted from this table of cases, and of the total number of cases of diseases of the female breast 10 were omitted because of insufficient data to establish a diagnosis. Acute mammary abscess was also excluded from consideration. With these exceptions all cases of disease of the mammary gland are included which entered the Massachusetts General Hospital during the decade from 1895 to 1905. One hundred additional consecutive cases of disease of the breast have been obtained from my own private practice, making up the total of 758 cases of all varieties with which we have to deal. Pathologic reports were available in nearly every case, and in many instances the actual specimens could be obtained and were used for further study and for purposes of illustration. Four hundred and fifty-nine of the hospital cases and 58 of the cases in private practice were cancer of the breast. These were included for purpose of comparison and in order better to establish the significant data for diagnosis. The greater part of the study, however, has been devoted to the benign diseases of the breast, 42 in private practice, 199 in the hospital series — a total of 241 cases of benign diseases of the breast. These are exclusive of re-entries or of cases in which two diseases of different types occurred. As an instance of the confusion in nomenclature, I might here state that in 199 cases of benign disease of the breast occurring in the Massachusetts General Hospital in ten years, 70 different pathologic diagnosis appeared on the record books.

Before taking up the question of classification of the benign tumors of the breast, I would like to call your attention to some anatomic peculiarities of the mammary gland which distinguish it from any other organ in the body. At no time during the various periods of its life history does it have an enduring type of anatomic structure. At birth the gland is represented by a series of radiating ducts with club-shaped extremities, but with no well-developed acini. The epithelium of these ducts is often in a state of active proliferation, causing swelling and tenderness of the gland, with ectasia of the ducts and supposed inflammation (acute mastitis of infants). Infection through the nipple may undoubtedly occur at this time, but in the vast majority of cases the swelling and tenderness are due entirely to the developmental activity of the gland. No material change in the gland takes place from this time until the age of puberty, when the development of the acini first really begins. An enlargement of the breast, with development of considerable tenderness is often noticed at puberty in males as well as females. The epithelial structures are now beginning to themselves prominent, but there is also a characteristic change in the tissue immediately around the ducts. The periductal connective tissue becomes transparent and rich in nuclei and presents a strong contrast to the interstitial tissue of the gland. This transparent periductal tissue is peculiar to the mammary gland. It gives the familiar consistency and shape to the virgin breast and enters largely into the new growths of the breast which take origin at this stage of its life history.

At the time of pregnancy another great change takes place in the anatomy of the breast. Now the epithelial activity of the gland is at its height, the acini multiply enormously, the tree may be said to be in full leaf. Meanwhile the interstitial tissue becomes stretched and the periductal tissue becomes less prominent. After lactation many of the acini wither and disappear, the interstitial tissue is relaxed and the breast becomes pendulous.

The declining period in the life history of the mammary gland may begin in middle life, and presents a condition which is of great interest to the surgeon. The breast, as it were, gradually dries up. Change is noticed especially in the acini and in the interstitial tissue. The epithelium is no longer in a state of active proliferation, but degenerative changes gradually gain the upper hand. Some ducts are choked with epithelial débris, while others are compressed by the contracting interstitial tissue of the gland, and the blood vessels become thrombosed and disappear. Obstruction takes place here and there, and slight dilatation of the small ducts and acini occurs, with induration of the surrounding tissues. If the breast in this condition is gently pressed against the thorax with the flat of the fingers it will be found to contain a large number of small hard nodules. This condition I have described as the "cobble-stone" feel of the breast. It is present in almost every breast at a certain stage of its decline, and should be regarded as a normal condition at this period of the life history of the gland. If the gland is incised these nodules will be found to be composed of fibrous tissue or of small cysts filled with a slightly discolored fluid which derives its hue from solution of the old blood crystals and pigment from the thrombosed blood vessels.

As the gland tissue is absorbed after lactation,[2] and with advancing years, a certain amount of adipose tissue takes its place, and in old age we find the mammary gland represented merely by a few ducts near the nipple and some small strands

of fibrous stroma, the meshes of which are well filled with fat. Keeping in mind the anatomic peculiarities of the mammary gland, we find two distinct structures intimately associated with different periods of its life history. I refer to the periductal fibrous tissue so prominent in early life and to the epithelial elements which at certain later periods, as in lactation, attain the perfection of their development. These two structures are so intimately associated one with another that it is impossible for a neoplastic formation to develop without partaking somewhat of the characteristics of both tissues. The periductal fibrous tissue of the gland cannot form a tumor without involving, to a certain extent, the epithelium of the ducts. Nor can the epithelial elements grow entirely independent of their fibrous support without placing the growth at once in the category of carcinoma. A consistent classification of the tumors of the breast must, therefore, take into consideration both of these elements, and the term "fibro-epithelial" tumors, suggested by Ribbert,[4] best meets these indications.

Tumors are classified, however, either according to the nature of the tissue of their origin or the tissue which forms their most significant part. In these fibro-epithelial tumors, therefore, certain subdivisions are possible and, indeed, important, according to the tissues which are most seriously involved. A ready distinction is suggested at once between the tumors which are chiefly of a fibrous character and those in which the epithelium is more involved. This distinction, moreover, has an important clinical value, as there is a tendency of the fibrous group toward sarcomatous change and of the epithelial group toward carcinomatous degeneration. Under fibro-epithelial tumors of a fibrous character we may thus distinguish three divisions — the periductal fibroma, periductal myoxma, and periductal sarcoma. Those of the epithelial group we can divide into the fibro-cyst-adenoma and the papillary cyst-adenoma. In the tumors of the fibrous group the fibrous tissue is the predominant feature of the tumor, epithelium being present, but playing only a subordinate part. In the epithelial group the fibrous tissue is present also, but merely in sufficient quantity as to be regarded as a stroma, the growth of epithelium being the predominant feature of the tumor.

The term hyperplasia I have reserved for those diffuse changes which are characteristic of the breast at certain periods of its life history. From their very diffuse character, these cannot properly be placed within the category of tumor formation. They cover not only that common condition which we find so characteristic a feature of the involution stage of the normal breast and which has passed under the many terms of "chronic cystic mastitis," "cystic disease of the breast," etc., but also that rare diffuse hyperplastic growth of all the elements of the gland at the period of highest physical development — "diffuse hypertrophy." The chronic inflammatory processes of the mammary gland present no special difficulties in classification; but they, as well as the non-indigenous tumors of the breast, are included in the table to round out the classification of all lesions, with the exception of acute mammary abscess.

The diagnosis of diseases of the breast is undoubtedly the first consideration, and it is for this reason that the cases of carcinoma have been included in the list below and must now receive a brief analysis.

Cancer occurred in 459, or 70%, of all tumors in the hospital cases and in 58, or 58%, of the cases in private practice. The proportion of cancer to other breast tumor was thus greater

Table I — Classification of 758 Cases of Breast Tumor.

	M. G. H.	Private Cases.	Total.	Per Cent.
Carcinoma	459	58	517	68
Fibro-Epithelial Tumors	...	...	(86)	(11)
(1) Fibrous type	...	...	(70)	(9)
1. Periductal fibroma	48	6	54	7
2. Periductal myxoma	10	2	12	1.6
3. Periductal sarcoma	4	0	4	.5
(2) Epithelial type (Cyst adenoma)	...	...	(16)	(2)
1. Fibro-cyst-adenoma	3	1	4	.5
2. Papillary cyst-adenoma	9	3	12	1.6
Hyperplasia				
1. Diffuse hypertrophy	2	0	2	.2
2. Abnormal involution (Cystic,(59) (Proliferative, 56)	87	28	115	15
Chronic Inflammation	...	...	(28)	(3.7)
1. Eczema of nipple	2	0	2	.2
2. Chronic abscess	5	0	5	.6
3. Ductal mastitis	3	0	3	.3
4. Tuberculosis	13	0	13	1.7
5. Single rentention cyst	5	0	5	.6
Non-indigenous tumors	...	...	(9)	(1.2)
1. Sarcoma	4	0	4	.5
2. Lipoma	3	1	4	.5
3. Lymphangioma	1	0	1	.1
Supernumerary breast	...	1	1	.1
	658	100	758	

in hospital cases than in private practice. This is undoubtedly due to the fact that the milder cases of benign tumor are occasionally treated in the out-patient department of a hospital and, therefore, do not enter into this number of cases, whereas in private practice all cases are included. The fact, however, is obvious that cancer forms the great majority of actual new growths of the breast, and if the conditions known as abnormal involution are left out of consideration this predominance of cancer over other tumors becomes even more conspicuous.

Paget's disease of the nipple occurred in this number of cases six times in connection with cancer of one or another variety; and eczema of the nipple and areola, similar in every way to Paget's disease, but without evidence of malignancy, was found in two additional cases during this ten-year period.[5]

The forms of cancer which have developed from other benign tumors or conditions of the breast are of special interest to us in this connection. During this period thirteen cases occurred in the hospital and four in the cases of private practice, in which cancer resulted from, or was present in connection with, benign diseases of the breast.

The involution changes of the breast are those which accompany or precede cancer more frequently than any other form of benign lesion, and by far the greatest number of cases of this character show the picture of adeno-carcinoma. Nine cases of adeno-carcinoma and three of medullary carcinoma occurred with abnormal involution. Three cases of scirrhus cancer also occurred which presented the lesions of abnormal involution. In the hospital series also two cases of adeno-carcinoma occurred in connection with tumors of the papillary cyst-adenoma type. The significance of these cases of cancer will be especially considered under the discussion of the benign tumors of the breast.

The age incidence of the different tumors and diseases of the breast is a matter of considerable importance in diagnosis. I have arranged Table 2 to show the number and percentage of cases of the different lesions occurring in each decade of life.

By this table it is to be seen that the proportion of cancer to other tumors of the breast is a constantly increasing one to the end of life. While between twenty and thirty years of age cancer occurs in only 6% of all cases, after seventy years the percentage is 100. All of the twenty-five tumors of the breast occurring in the Massachusetts General Hospital in ten years, in women who were over seventy years of age, were cancer.

The periductal fibromata, on the other hand, are most numerous in the third decade from twenty to thirty, and constitute 50% of all tumors occurring at this period. From this time they gradually diminish in frequency until the sixth decade, after which they disappear.

Of the cyst-adenomata, we find that tumor (fibro-cyst-adenoma) which is most nearly related to the periductal fibromata, appearing in the same decades, the third and fourth, with the majority of the latter, while the papillary cyst-adenoma, beginning in the fourth decade, continues to the seventh, and, therefore, belongs to a distinctly later period of life.

Abnormal involution reaches high-water mark in the fifth decade, forty to fifty years, with 21%

TABLE II — INCIDENCE OF BREAST TUMORS BY AGE DECADES.

	No. of Cases.	10-20 Yrs.	20-30 Yrs.	30-40 Yrs.	40-50 Yrs.	50-60 Yrs.	60-70 Yrs.	70-80 Yrs.	80 Yrs.
Carcinoma	459	....	6	67	151	130	80	24	1
			12%	60%	70%	85%	92%	100%	100%
Periductal sarcoma	4	....	....	....	1	3	....	....	....
					.4%	2%			
Periductal myxoma	10	....	5	1	3	1	....	....	....
			10%	1%	1.5%	.6%			
Periductal fibroma	48	4	26	13	4	1	....	....	....
		45%	50%	11%	2%	.6%			
Fibro-cyst-adenoma	3	....	1	2	....	....	....	....	....
			2%	2%					
Papillary cyst-adenoma	9	....	....	1	3	2	3	....	....
				1%	1.5%	1%	3%		
Diffuse hypertrophy	2	1	....	....	1	....	....	....	....
		11%			.4%				
Abnormal involution	87	....	7	20	45	13	2	....	....
			13%	18%	21%	8%	2%		
Eczema of nipple	2	....	....	....	....	2	....	....	....
					1%				
Chronic abscess and ductal mastitis	8	....	2	2	3	1	....	....	....
			4%	2%	1.5%	.6%			
Single retention cyst	5	....	2	1	2	....	....	....	....
			4%	1%	1%				
Tuberculosis	13	3	3	3	4	....	....	....	....
		33%	6%	3%	2%				
Non-indigenous sarcoma	4	....	....	2	1	....	1	....	....
				2%	.4%		1%		
Other non-indigenous tumors	4	1	1	....	....	1	1	....	....
		11%	2%			.6%	1%		
Total Cases	658	9	53	112	218	154	87	24	1

of the tumors occurring in this period. This corresponds closely with the average age given for abnormal involution, which is from forty-two to forty-five. The age incidence of other diseases is of less significance. The inflammatory processes, as might be expected, occur especially in the early decades, and tuberculosis, in this series of cases, appears to have affected the breasts of younger women than has generally been believed. The non-indigenous sarcomata of the breast, though few in number, occur rather in the middle period of life.

FIBRO-EPITHELIAL TUMORS.

The fibro-epithelial tumors now present themselves for consideration. These new growths of the breast have been described under so many different names that even an enumeration of all their titles is impossible. Before the middle of the last century all tumors of the breast were regarded as cancer. When Cruveilhier first recognized the existence of benign tumors of the breast a storm of opposition was raised in the French Academy of Medicine. Cruveilhier described a fibroma of the breast, but this name was not accepted, and a multitude of other names were used to describe the tumors of this character. Thus Johannes Müller adopted the term of cysto-sarcoma-phyllodes; Brodie, sero-cystic sarcoma; Sir Astley Cooper, hydatid tumor; Billroth,[3] fibroma and cysto-sarcoma; Paget, chronic mammary and proliferous cysts. Adenocele, adeno-fibroma, fibro-adenoma, cystadenoma proliferum and intracanalicular-papillary-fibroma are all terms which have been used at one time or another to apply to fibrous tumors of the fibro-epithelial group. The reason for this diversity of nomenclature is readily found when the attempt is made to reduce the tumor to its component parts. In one case fibrous tissue predominates, but in another the glandular structures play a more important part. Ribbert [4] undoubtedly reaches the most satisfactory solution of this difficulty by grouping the tumors of this nature apart, not as fibroma or as adenoma, but as fibro-epithelial tumors partaking of the character of both tissues. One fact, however, is apparent in the consideration of these cases; and, although long ago pointed out by Billroth,[3] this fact has not received the attention of surgeons and pathologists which is its due. I refer to the fact that the chief constituent of the tumors of the fibrous type is the peculiar transparent periductal tissue of the female breast. This periductal tissue makes its appearance and develops during the period after puberty and before lactation, and it is at this period that the vast majority of tumors of the fibrous type occur. No one can deny that this periductal tissue is essentially a part of the glandular structure of the breast, and its close relation to the epithelium of the ducts and the interdependence of the two tissues make it practically impossible for the one to undergo the changes of tumor formation without the other participating in the process to a greater or less extent. For these reasons I have recently adopted the term *periductal fibroma* as the most accurate name to apply to the tumors of this character, and this term I venture to offer in the hope that the name "adeno" may be reserved for the tumors in which the epithelial elements play a more important part. Cystic dilatation of the ducts or of the characteristic clefts of the periductal fibroma may occur in certain instances, and is due in all probability to the obstruction of the pre-existing ducts. These cysts are thus secondary in character and of relatively secondary importance. The clinical characteristics of the more cystic forms of periductal fibroma are as little to be distinguished as their pathological ones, and although the attempt was made in this investigation to separate the cystic from the more solid tumors of this class, it was soon apparent that no data of value could be obtained. These tumors of the fibrous type may, however, be divided according to their richness in cells or the character of their fibrous tissue, into three groups, fibroma, myxoma, and sarcoma.

PERIDUCTAL FIBROMA.

Under this heading are included the true encapsulated fibro-epithelial tumors arising from the periductal fibrous tissue and composed chiefly of this tissue with a certain admixture of epithelial elements. Of this type of tumor there were 48 cases in the hospital series and 6 in private practice, 7% of the whole number of diseases of the breast. They varied greatly in size, from a bean to a cocoanut, and 15 cases had multiple tumors in one or both breasts. The average size was about that of an English walnut. These tumors presented themselves clinically as hard nodules, freely movable in the breast tissue and under the skin. In gross appearance they presented firm, encapsulated tumors of a whitish, glistening appearance on section, and traversed by many cleft-like cavities, which were rarely distended to such an extent as to justify the term of cysts. Microscopically they showed a firm, fibrous capsule limiting them from the rest of the breast substance; but, while some were composed of dense tissue, others were looser in arrangement, and some had even a myxomatous appearance, which was attributable to edema.

The clinical features of tumors of this group could be summarized as follows:—

The greater number occurred in women from twenty to thirty years of age. Unmarried women were most commonly affected. The tumors were of slow growth and painless, although in certain instances increased sensitiveness at the time of catamenia was recorded. The situation of the tumors in the breast was variable, but the upper outer quadrant was most commonly involved. Amputation was required three times on account of the size of the tumor; in the other cases excision or resection was the operation which was performed. Eight of the 48 cases showed cyst formation to a greater or less extent, but no clinical features served to distinguish them from the other cases. In one case the

changes of abnormal involution were present in addition to the fibroma, and in one instance also carcinoma appeared to have originated in a tumor of this character.

PERIDUCTAL MYXOMA.

Ten cases occurred in the hospital series and two in private practice. The myxomata were obviously derived from the tumors of the periductal-fibrous group and differed from them only by their size, which was somewhat greater, and by the gross and microscopic appearance of myxomatous tissue on section of the tumor. It seems probable, as recorded by a number of other writers,[7][8][4] that the myxomatous character was due for the most part to the edema of the fibrous tissue which is characteristic of the periductal fibromata of the breast. These tumors occurred later in life than the fibromata and were of long duration. Rapid growth, however, was not unusual and the tumors were generally of large size. They were all hard in consistency. Necrosis and ulceration of the skin occurred in two cases, and enlarged axillary glands were sometimes found. Adhesion to the skin was present in one case in addition to two which showed ulceration. The pathologic characteristics were those of a large lobulated, well encapsulated tumor showing cyst cavities or clefts, and a homogeneous transparent stroma. Except for their size, it is obvious that these tumors differed in no marked essentials from the tumors of the fibroma class.

PERIDUCTAL SARCOMA.

Four cases of periductal sarcoma occurred in this entire series. These were tumors of the fibrous group with a stroma so cellular as to demand classification as sarcoma. All, however, presented the combination of cellular fibrous-tissue stroma and epithelial gland ducts. They were, as a rule, large, hard tumors involving the whole breast, the size of a cocoanut or a child's head. They were lobulated and encapsulated, with a marked tendency to ulceration and to cyst formation. The skin above the tumors was, as a rule, reddened and contained dilated veins, but was not invariably adherent. Axillary glands, as a rule, were not involved. The tumors were of long duration and the patients of advanced age, forty-four, fifty-one, fifty-three, and fifty-seven years. They were all married women. The growth of the tumor was slow at first, but in two cases had been more rapid within the last few months. Pain was insignificant. Amputation was done in every case.

Periductal sarcoma is thus seen to be merely an exaggeration of the periductal fibroma and myxoma, occurring somewhat later in life and presenting a tumor of greater size. Tumors of this nature, although generally described as sarcoma, have long been recognized to be of a very slight degree of malignancy. Schimmelbusch[7][8] has perhaps taken the most advanced position in this regard. The encapsulation and the absence of axillary or pulmonary metastasis would appear to support this contention, and it must be admitted that fibroma, myxoma and sarcoma are all tumors which are very closely related. It is unusual, in fact, to find a specimen of periductal sarcoma which does not show in some portions the characteristic picture of myxoma and of fibroma. The tendency to malignancy of the tumors of this group is only slight, and they cause disturbance principally of a local character. The danger of carcinoma is very remote. They cannot, however, be regarded as innocuous because of the limited tendency which they present to excessive growth and ulceration. For these reasons, operative removal is indicated. This may best be done in the small fibromata by the operation later to be described, under the term of "plastic resection of the mammary gland." The larger sarcomata and myxomata, however, require amputation. Although the determination of the end results of periductal sarcoma has not been worked out, a point not coming within the scope of this paper, my own experience has led me to estimate the tendency to recurrence after operation at a far lower figure than the 50% of Gross.[9]

FIBRO-EPITHELIAL GROUP — EPITHELIAL TYPE — CYST-ADENOMA.

A certain number of tumors of the fibro-epithelial group present such marked epithelial changes as to merit description under another heading separate from the tumors of the periductal fibrous type. Tumors of this nature occur in two main classes; both of which, however, are much rarer than the tumors of the fibrous type. For these two classes I have adopted the names (1)fibro-cyst-adenoma, and (2) papillary cyst-adenoma. The tendency to the formation of cysts in all inflammatory or neoplastic conditions of the mammary gland has been the cause of great confusion in nomenclature. A sharp line of differentiation, however, should be possible between a tumor of local unicentric growth and a diffuse process involving multiple areas in the gland or even the breast of the other side. For this reason I have seen fit to reject the term of "cyst-adenoma," for all but local new growths of a cystic character, the majority of which are tumors which come under the clinical classification, the papillary type. Multiple diffuse cyst formation in the breast I prefer to class as abnormal involution, and under that heading I will go more at length into the nomenclature of other writers. The occurrence of cystic tumors among the periductal fibromata has already been remarked, and allusion was there made to their purely secondary character.

FIBRO-CYST-ADENOMA.

In four cases in this entire series secondary epithelial new growth occurred in a periductal fibrous tumor, producing a combination of lobular and cystic epithelial growth in a troma of periductal tissue. To these tumors I have applied the name of "fibro-cyst-adenoma." They may be regarded as an epithelial exaggeration of the periductal

fibroma and their anatomical structure differs from the fibroma only in the secondary proliferation of their epithelium. Tumors of this character have been described by other writers chiefly as adenomata, papillary cyst-adenomata, cysto-adenoma-proliferum, poly-cystoma, cystic fibroma, tubular-adenoma, etc. The characteristics of the fibro-cyst-adenomata were as follows: The size of the tumors varied from the size of a walnut to that of a fist. They were lobular and of hard consistency, and movable under the skin. They had in general the appearance of a peri-ductal fibroma in which the epithelial lined slits greatly preponderate. The axillary glands were not enlarged and the nipples were not affected. On section these tumors presented a definite capsule and a lobular structure containing cysts of varying sizes. The cysts presented papillary outgrowths of connective tissue with a covering of epithelium. Microscopic examination showed marked proliferation in the epithelial cells lining the cyst cavity and covering the papillary outgrowths. The ducts appeared to be more involved in these tumors than the acini of the gland. All occurred in young single women, the average age being thirty-two. They were tumors of slow growth and of long duration. Pain and discharge from the nipple were not recorded. All of these tumors were removed by excision without amputation of the breast.

The prognosis of tumors of the fibro-cyst-adenoma type must be regarded as entirely favorable, and removal of the tumor without amputation of the breast gives freedom from recurrence. It must be said, however, that the indication for operation in these tumors is even greater than in the fibromata, because of the epithelial proliferation which they present and the possibilities of its later development into carcinoma.

PAPILLARY CYST-ADENOMA.

The last group of tumors of the fibro-epithelial type comes under the heading of "papillary cyst-adenoma." These tumors are perhaps the most distinctive in clinical characteristics of any of the benign neoplasms of the breast. Nine cases occurred in the hospital series and three in private practice. They thus form the majority of the tumors which go to make up the epithelial division of the fibro-epithelial group. Tumors of this nature have been described by different writers under many headings. Gross [10] in his classification in 1880 attempted to restrict to them the term "adenoma" or "true adenoma," with the intention of indicating the growth of glandular epithelium in the form of tubes and ducts which they present. The English writers [11] [12] [13] describe these tumors under the terms villous papilloma, duct papilloma; or by what, in the light of modern investigation, we must consider the misnomer "duct cancer." By the German writers [14] [4] [15] [7] [16] they are commonly known as cyst-adenoma-papillare, poly-cystoma proliferum, intracanalicular cyst-adenoma, proliferating cyst-adenoma, or papillary cystoma.

To my mind the term papillary cyst-adenoma is the most satisfactory name for tumors of this variety. The histologic picture of a papillary or warty outgrowth is that of a connective tissue pedicle surmounted by an epithelial covering. Papillary structures of this character are the distinguishing feature of the tumors of this group and serve to differentiate them absolutely from other benign tumors of the breast. Tumors of this character rarely attain great size. Their consistency is hard although fluctuation may occasionally be detected. Adherence to the skin and enlargement of the axillary glands are not to be expected. The situation of the tumor in the breast is generally beneath or in close relation to the nipple. On gross examination these tumors present the picture of a cyst cavity containing papillary or villous outgrowths from its wall. The fluid contents of the cyst is generally hemorrhagic. Microscopic section shows the characteristic papillary outgrowth of connective tissue surmounted by a luxuriant growth of epithelium. The epithelium in these cases presents the characteristics of ductal rather than acinal epithelial cells. The average age of the cases of tumors of this type was fifty-two years; and married women, especially those who have borne children and reared large families, appear to be especially predisposed. As a rule, the tumors are of slow growth and of long duration. The most characteristic symptom, however, is the discharge of bloody fluid from the nipple, which occurs in the majority of cases.

Amputation was done in three cases of papillary cyst-adenoma and resection and excision in six. The absence of recurrence after operation is strong evidence in favor of the right of the tumor to a place in the category of benign neoplasms.

Papillary cyst-adenoma is thus seen to be a tumor occurring late in the life history of the breast, and one to which the functional activity of the gland in a certain measure predisposes. They are comparatively rare, but their significance must not be overlooked on that account, and it should be noted that, although only nine cases occurred during this decade in the hospital series, during that time two cases of cancer were found in which this disease was also present. In fact papillary cyst-adenoma has been thought to predispose to a special form of cancer, "adeno-carcinoma-destruens" (Tietze [15]), and this condition was present in both of the cases to which I have referred. The prognosis then of these tumors with early and complete removal is good. If not removed by operation, however, the danger of malignant sequelæ is very great.

HYPERPLASIA.

The term "hyperplasia" I have reserved in this classification for those processes in the breast which are of a diffuse character and for this reason to be sharply differentiated from the local uni-centric process of actual tumor formation.

By hyperplasia is meant an increase in the fibrous and epithelial elements of the breast,

affecting one or more lobules of the gland, and presenting the microscopic picture of an increase in the number of cell elements of both of the significant tissues, the fibrous stroma, and the epithelium. Under this category two main divisions can be made: (1) "diffuse hypertrophy" of the breast, and (2) abnormal involution.

DIFFUSE HYPERTROPHY.

The so-called "diffuse hypertrophy" of the breast is a rare disease, but one which has received attention from many writers.[17] Two instances of this disease are included in the hospital series of cases, and fortunately the two cases serve to illustrate well the two main sub-varieties of this condition.

One form of diffuse hypertrophy, and perhaps the most common variety, is that which occurs in connection with pregnancy.

Of this form we have an example in the case of a woman of forty-three, who had undergone two miscarriages and who presented the abnormalities and diseases of the pelvic organs which have so frequently been noted in connection with this disease. Both breasts were affected and were uniformly enlarged. The consistency of the breasts was soft, but hard, stringy nodules could be detected on palpation. Microscopic examination showed the presence of fat, loose fibrous tissue and atrophied gland structures. There were no cysts nor discrete fibromata. The breasts gave trouble only from their size, and the pain was of an insignificant character; a double amputation was performed.

The other case serves to illustrate the condition as it appears in younger women. This occurred in an unmarried girl of seventeen, and involved the left breast only, which was enlarged to two or three times the size of the breast on the other side. The consistency of the breast was nodular and corded, and tenderness or "mastodynia" in this case was a marked feature. Irregularity of catamenia was noted, but no other abnormality of the pelvic organs could be determined. In this case no operation was done and a year and a half later, under palliative treatment by supporting bandages, the enlargement of the breast had partially subsided and tenderness and mastodynia had diminished to a moderate extent.

ABNORMAL INVOLUTION.

The hyperplastic changes in the tissue of the mammary gland which accompany the process of involution have long been the subject of contention and controversy among pathologists and clinicians. The chief source of difficulty in the classification of the involution changes of the breast is undoubtedly to be attributed to the tendency which the gland exhibits to the formation of multiple cyst cavities. In all probability a moderate degree of dilatation of the ducts may be considered the normal condition of the breast at a certain stage of its decline, and only when these cysts and their surrounding stroma become so extensive as to attract attention by the induration which they produce does the process attain a degree of abnormality sufficient to classify it as pathologic. Multiple cystic disease of the breast has long been recognized, and has been many times described under a multitude of different terms. Abernethy and Bell considered this a form of hydatid disease, as did also Sir Astley Cooper. Brodie took the view that the cysts were caused by dilatation of the pre-existing ducts, and the French surgeons of that time agreed in this interpretation. Paget believed that cysts were formed in the breast both by obstruction and by active new growth, and the German school of pathologists of that time were inclined to attribute the multiple cysts of the declining breast to an active new growth of the acinal epithelium, although Virchow was a believer in the obstructive origin of mammary cyst formation. A new impetus was given to the study of this disease by Réclus,[18] who in 1860 attempted to show that the cysts were produced by an active new growth of the epithelium of the gland closely allied to carcinoma, and gave to it the name of intra-acinous cystic epithelioma. Later publications in 1887 called attention more specifically to the epithelial origin of these growths and the disease became known in France as the "maladie de Réclus."

From the time of Réclus's later publications many different theorets have been advanced to explain the occurrence of multiple cysts in the involuting breast. These theories may be grouped into three main classes, which may be briefly described as follows: —

1. *Inflammatory Theory.* — The prevailing theory among French[19 20 21] and English surgeons,[22 23 24 25] and the view which has been vigorously supported by Koenig[24] and other German surgeons,[26] attributes the cyst formation to inflammatory origin, "chronic cyst mastitis." Whether this inflammatory process arises from infection of the ducts, as believed by the French writers, or whether it is of a more remote character, is not determined. The chief points on which the theory is based are the evidences of chronic inflammation in the round-cell infiltration and thickened stroma of the gland, and in the clinical course of the disease, which is thought to be subject to repeated exacerbations. Koenig lays great stress upon the increased swelling and sensitiveness at the time of the catamenia.

2. *New-Growth Theory.* — The second theory, advanced originally by Schimmelbusch,[7] and supported by Sasse,[15] Maly,[26] and to a certain extent by Tietze,[16] attributes the process to an actual new growth. This theory is widely accepted in Germany, and has obtained some support in other countries. Because of the supposed relation to tumor formation, the names of cyst-adenoma (Schimmelbusch[7]), poly-cystoma (Sasse[15]), or cystoma (Tietze[16]), have been proposed. It should be stated that Sasse and others attempt to distinguish the lesser degree of this disease, under the name of "involution cyst," from the more advanced process of "poly-cystoma." The line, however, between the two conditions

appears to be determined with the greatest difficulty.

3. *Involution Theory.* — A later theory, and the one which has been supported by the investigations which have been carried on in this country, rejects both the inflammatory and the neoplastic origin, and refers the proliferation of the breast epithelium to the abnormal conditions produced by involution. This is, in a measure, a return to the views of Réclus, who recognized the significance of the epithelial proliferation, but erred, in considering this the origin of the process.

Tietze [16] agrees that the disease is chiefly epithelial in character, and of a more diffuse distribution than would warrant the title of a tumor. Bloodgood [37] has recognized this fact in the name which he suggests of "senile atypical parenchymatous hypertrophy." Greenough and Hartwell [38] made a study of 30 cases of this disease in 1902. By these writers the chronic appearances of the stroma of chronic cystic disease of the breast are considered to be of secondary importance, whereas the diffuse character of the epithelial proliferation is thought to be evidence sufficient to prevent the interpretation of the process as an actual new-growth. According to their views, the connective tissue increase is attributed to the normal process of involution and atrophy which the breast gland shares during its declining stage, with other organs of the genital apparatus. Cystic changes of the ducts and acini are produced by obstruction from this thickened fibrous tissue. Up to this point the process may be considered physiologic. It has long been understood, however, that the epithelium of the breast gland is of notoriously unstable equilibrium and the abnormal condition of cyst formation provides a stimulus which in about half the cases of this disease, as nearly as can be estimated, leads to secondary proliferation of the epithelium. Were we able to state at what point this epithelial proliferation would cease no danger from this disease need be apprehended, but it has been determined by a number of different observers that in the proportion of about one case in ten this epithelial proliferation oversteps the bounds of hyperplasia into the territory of malignant new-growth. It is probably to these proliferative cases of abnormal involution that Sasse and Schimmelbusch would restrict the term polycystoma or cyst-adenoma, and it must be confessed that a certain number of advanced cases of abnormal involution can be distinguished with great difficulty from actual new-growth. It has seemed to me, however, to be safer to restrict the term "cyst-adenoma" to tumors of local origin and well-determined outline, and to apply the general term of hyperplasia or abnormal involution to all of those diffuse processes which by their microscopical appearances are still within the pale of benign diseases of the breast.

The chronic interstitial mastitis of the English writers, [22 23 11 12] chronic cirrhosing mastitis (Billroth [4]), cystoma (Sasse [15]), or cystoma (Tietze [16]) have been tic epithelioma (Réclus [17]), maladie de Réclus,[10] maladie noneuse de la mammelle (Phocas [21]), chronic cystic mastitis (Œnig [24]), periductal mastitis (Delbert [25]), poly-cystoma epitheliale (Sasse [15]), cyst-adenoma (Schimmelbusch [7]), plexiform fibroma (French [19] writers), chronic mastitis or diffuse fibro-adenoma (Wood [20]), cystic disease of the breast (Bryant [11]), and fibrous and glandular hyperplasia with retention cysts, — are but a few of the designations which have been applied to this disease. The last term, which was evolved by Dr. W. F. Whitney, pathologist to the Massachusetts General Hospital, is probably the most correct and satisfactory appellation for this condition which could be devised, but suffers in being too unwieldly for practical use. For this reason I prefer the name of "abnormal involution."

Eighty-seven cases of abnormal involution appear in the hospital series and 28 in the cases from private practice. Of this total number 59 show lesions which are classified as cystic only, the remaining 56 presenting evidence of epithelial proliferation. A certain amount of fibrous tissue increase with more or less round-cell infiltration is characteristic of involution of the breast under any circumstances.

The changes which have been classed as cystic are those presented by breasts in which this fibrous thickening has produced dilatation of the ducts alone without obvious changes in the character of the epithelium. The proliferative group are those which are characterized in addition by proliferative changes in the epithelium of the cysts or acini.

Of the proliferative group, three subdivisions have been distinguished according to the character or degree of the epithelial growth: (1) proliferation of the acini, (2) papillary outgrowths of epithelium into cysts, and (3) adenomatous proliferation of epithelium. The significance of these three groups will appear in the discussion of their special characteristics. The gross appearances of cases of abnormal involution may be summarized as follows: A considerable proportion of the cases are diffuse in character, while others present local indurations of the breast tissue of varying size and situation. The consisteney of this induration is hard or nodular, although softer and even fluctuating areas are occationally noted. It would seem, however, that a cyst to be appreciated with certainty by its elastic feeling or fluctuation must attain considerable size. Pain and tenderness are present in about half of the cases, and although not diagnostic this symptom must be considered of significance in view of the generally painless character of carcinoma. Axillary glands are detected in only a small proportion of the cases. It has been my impression, based on clinical experience, that inversion of the nipple is a frequent accompaniment of abnormal involution and it may certainly be stated that previous diseases or abnormalities of the breast, such lesions especially as interfere with the normal function of the gland, are predisposing factors in the origin of this disease.

On gross examination these specimens show fibrous induration of the breast gland, with the presence of multiple cystic cavities containing fluid varying from a clear serum, through all the shades of brown and green and black. The process is diffuse in the vast majority of cases, although one lobule of the gland is often noted as the situation in which the disease is most advanced. Under microscopic examination fibrous hyperplasia and secondary involvement of the gland structures with cyst formation is observed.

The majority of cases occurred between forty and fifty years of age. Married women were apparently the more susceptible to the disease. The duration was a matter of considerable variation, and the rate of growth was generally slow. Trauma was apparently of comparatively little etiologic importance. In this series of cases the relation between exacerbations of the disease and the catamenial period was conspicuous by its absence. only four cases having stated that the induration was influenced in its sensitiveness or in size by the monthly period. Discharge from the nipple was noted in 14 cases, and was relatively more frequent among the proliferative than among the purely cystic types of involution. The character of the discharge varied from yellow serum and watery or milky fluids to brownish and bloody fluid and even pus. Of the 14 cases, however, which showed a discharge from the nipple, 7 presented tumors immediately beneath the nipple, and it is probable that discharge from the nipple will be found to depend more on the situation of the cyst than on the character of the epithelial changes within its wall. The right breast was involved in 27 cases, the left in 42, and both breasts in 17. The tendency to the involvement of both breasts in this disease is worthy of remark. So far as the situation of the induration in the breast tissue is concerned, the outer and upper hemispheres appear to be the seats of predilection; and the upper and outer quadrant, as in almost all diseases of the breast, is the region most commonly affected. Diffuse induration involving the whole breast occurred in 14 cases. Operation was performed in 86 of these 87 cases. In 41 the entire breast was amputated. In 45 an excision or resection of the breast was done after the method later to be detailed.

The subclassification of the cases of the proliferative type is of interest only from a histologic point of view, and can be determined only by microscopic examination.

The 36 hospital cases which presented proliferation were subdivided as follows: Ten showed an apparent increase in the number of the gland acini, when compared with normal breasts of the same age, and conditions of marriage, childbirth, and lactation. This increase in the number of acini was accompanied in the majority of instances by a proliferation of the epithelium to such an extent that thickened or even solid columns of cells were produced, retaining, however, the characteristic formation of the gland ducts, and presenting no infiltration beyond the basement membrane. The significance of this form of proliferation could not be determined from the cases which were available for examination. But it is not improbable that it may ultimately lead to carcinoma. In support of this assertion one case of scirrhus cancer occurred in the hospital series and two in private practice, in which abnormal involution of the acinal type was also present. The clinical characteristics of the cases of acinal proliferation were not to be distinguished from those of other types of abnormal involution.

Another class of epithelial proliferation in abnormal involution is to be described under the term of papillary proliferation. This group again is one of only histologic significance. By this term is meant a growth of epithelium in cyst cavities of such a nature that the epithelial cells are heaped up and project into the cavity, without a connective tissue pedicle or support. The microscopic picture of this papillary projection suggests strongly that more epithelium is produced in the lining of the cyst wall than can be accommodated on the basement membrane, with the result that certain portions are forced out toward the center of the cavity. There were 18 cases of abnormal involution which presented this form of proliferation. Of this class again, the clinical characteristics are not to be distinguished from those of other forms of abnormal involution.

The third and last type of epithelial proliferation which is to be distinguished is that to which Tietze [18] and Greenough and Hartwell [20] have applied to the name of "adenomatous" proliferation. Adenomatous proliferation occurs only in cases in which papillary outgrowths are already present, and must be regarded as a somewhat more advanced type of epithelial growth. In these cases the papillary outgrowths from different portions of the cyst wall appear to meet and fuse together, and the resulting microscopic picture is that of a space filled with epithelial cells in which here and there an open gland lumen is observed. This form of proliferation occurred in eight of the hospital cases and in four of the cases from private practice.

Adenomatous proliferation derives its greatest interest, however, from the fact that it is chiefly in its presence that we find the combination of involution and carcinoma. During the ten years in which the 12 cases of adenomatous proliferation have been collected, 517 cases of cancer have come under observation. Of this number there were 15 which presented the lesions of abnormal involution and carcinoma. Three of these cases showed scirrhus carcinoma in connection with abnormal involution of the acinal type of proliferation. These have already been considered. Of the remaining 12 cases, 9 showed adenocarcinoma with involution changes of the papillary and adenomatous character. In the three other cases medullary carcinoma of a more advanced type was recorded in the pathologic report. Thus during the collection of 115 cases of abnormal involution 15 cases of this disease

in combination with carcinoma were obtained, or 13%. This figure is somewhat greater than the 10% which has been found by Tietze,[14] Greenough and Hartwell,[15] and others, but may be considered as very closely approximating the actual condition.

Attention must again be called to the fact that the clinical symptoms of these proliferative types of abnormal involution are to be distinguished in no way from those of simple abnormal involution, and by no sign on physical examination can the degree of epithelial growth be determined. Microscopic examination is, therefore, absolutely necessary for the correct classification of the individual case, and in fact the variation between the different portions of the same gland is so great that microscopic examination of all the tissues is necessary to a correct diagnosis.[20] For these reasons and because of the liability to carcinoma which these cases present, I have no hesitation in recommending operative treatment for abnormal involution in every case. An induration in the breast gland at or about the time of the menopause which is palpable with the flat of the hand against the chest wall I consider sufficient indication for operation.

For cases of this character I perform "plastic resection of the mammary gland," by means of which a thorough exploration of the gland may be obtained and portions of a suspicious nature may be removed for microscopic investigation without the mutilation of an amputation. This operation I would recommend for every case of abnormal involution in which the diagnosis can be established.

CHRONIC INFLAMMATORY DISEASES.

The chronic inflammatory diseases of the breast are divisible into two main classes, those occurring in connection with lactation, and those produced by specific inflammatory diseases such as tuberculosis. It is to these diseases of the breast that the much-abused term "chronic mastitis" should really be applied, but this term has been so loosely employed that its use in any way is at present inadvisable. In addition to the two main classes detailed above, I have ventured to place in the category of chronic inflammation two cases of non-malignant eczema of the nipple, and five cases of single retention cyst of mechanic origin. It is to be regretted that no case of syphilis or actino-mycosis entered the hospital during this decade, as it is under this heading that these diseases should be classified.

There were eight cases of chronic lactation mastitis and 13 of tuberculosis in the hospital series. Chronic lactation mastitis has been again subdivided into five cases of chronic abscess and three of inflammation of the ducts (ductal mastitis). The cases of ductal mastitis show multiple small abscesses and necrotic foci distributed through the breast gland in close relation with the larger ducts. Clinically they present tender indurated masses in the breast. The mass may be adherent to the skin, and enlarged axillary glands may be present. Microscopically these breasts show an increased amount of fibrous tissue with small yellowish foci of necrosis and abscess cavities, while the tissue about the ducts is infiltrated with great numbers of small round cells and leucocytes. The disease especially affects young women, and may be attributed to infection of the ducts during the process of lactation. The chief clinical characteristics are diffuse induration of the breast occurring shortly after lactation, with a tendency to involvement of the skin and more pain and tenderness than would be expected with a tumor. In two of our cases the breast was amputated, and in one the affected lobule was excised.

CHRONIC ABSCESS.

Five cases of chronic or subacute abscess of the breast occurred during the decade. All presented a tumor or nodular induration of the breast of varying size, and in only one case was fluctuation to be detected. Tenderness, adherence to the skin and enlargement of the axillary glands were occasionally noted. The pathologic examination showed one or more abscess cavities of varying size, and microscopic examination showed excessive infiltration of the gland tissue with leucocytes and round cells. The patients were all young adults. All were married, and four had had children, while one had never been able to nurse her child. Two gave a history of previous acute breast abscess. The abscesses were, as a rule, of slow development, and pain was not a pronounced symptom. In two cases old discharging sinuses from previous acute abscesses were still present. In three cases incisions with drainage were made; in one case the breast was amputated, and in one the affected lobule was excised.

GALACTOCELE.

One of the cases of chronic abscess presented, in addition to the abscess, the picture of a retention cyst in a breast which was in active lactation. This condition has been repeatedly described under the name of galactocele, but its occurrence is comparatively infrequent, as may be seen from the fact that but one instance occurred in our total of 758 cases. The symptoms of galactocele do not differ appreciably from those of single retention cysts, except that the condition occurs in a breast which is yet, or has been recently, in active lactation. Under these circumstances the contents of the cyst is of a milky rather than of a serous character, because of the milk-secreting function of the cells which line the cyst at this period of the breast's development.

TUBERCULOSIS.

In this division are included the thirteen cases of chronic disease of the breast produced by the tuberclebacilli. Indurated masses of varying size were produced in the breast, of irregular outline and varying consistency. Tenderness and fluctuation were present in most of the cases.

The tendency to involvement of the skin was marked, and in seven cases there were discharging sinuses present at the time of operation. Enlargement of the axillary glands was generally noted. Tuberculosis of other organs was present in only three cases. Microscopic examination of the specimens showed the characteristic tubercular tissue with cheesy foci of necrosis and the typical histologic peculiarities of tuberculosis.

The average age was thirty years, and in three cases the patients were under twenty years of age, although the disease was well distributed through the decades of adult life. Married women who had borne children appeared to be the most susceptible, and in two cases acute abscess had occurred during a previous lactation. The average duration was nine months and the development of the disease was of a chronic character. Pain was absent in about half the cases. Both breasts were involved in only one case; and the upper and outer quadrant was again the seat of predilection. In seven cases the breast was amputated, in four a portion was excised, and in two the abscess was simply opened and drained. The immediate result in all of these cases was satisfactory.

SINGLE RETENTION CYST.

Five cases occurred in the hospital series which presented the characteristics of a single cyst, of varying size, with no abnormality of the surrounding tissues. These cases have been separated from those of abnormal involution because of their purely local character and the absence of pathologic changes in the breast tissue in their immediate vicinity. It is not to be denied that a certain number may belong properly among those of abnormal involution, and that a more extensive examination might have given data which would justify their inclusion among the latter class. In the absence of these data, however, it has seemed wiser to place the single retention cysts in a separate class. Cysts of this character have been described under the name of "evolution" cysts by Gross.[10] They differ in no way from the simple cysts produced in other glandular structures by accidental occlusion of a duct. We are especially familiar with cysts of this type in the epididymis and the salivary glands. Occlusion of a duct may be due to any one of a number of different causes; congenital defects, trauma, and the scars of transient inflammatory processes of the nipple or in the substance of the gland, being perhaps most frequently observed. Operations on the breast for small fibromata are not infrequently followed by cicatrical obstruction of the ducts.

The five cases here presented varied from twenty-one to forty-nine years of age — three were single and two married women. The duration was comparatively short (an average of about two months) and development was rapid; there was no pain or tenderness as a rule, and the clinical appearances were those of a single, painless, elastic, fluctuating tumor, varying in size from a walnut to a hen's egg, and of uniform and rapid growth. The axillary glands were not enlarged. Excision was done in every case, and a single thin-walled cyst removed without other abnormality of the gland. The fluid contained in these cysts varied from clear serum to a fluid of yellowish-brown color — with more or less turbidity. The significance of a single retention cyst in the breast must be considered very slight, and their chief interest and importance lie in the difficulty in distinguishing them from multiple cysts of abnormal involution. Because of this difficulty, exploration and excision are to be advised.

NON-INDIGENOUS TUMORS OF THE BREAST.

A certain number of tumors of the breast occur which are situated in that organ only accidentally, as it were, and have no special relation to the mammary gland as regards their origin. Among these tumors I have classed the sarcomata, which were derived not from the periductal tissue but from other sources, and which presented no evidence of inclusion of the glandular elements of the breast. Two of these tumors were classified as fibro-sacroma, one was of mixed cells and one of spindle cells. All were much smaller in size than the periductal sarcomata, and all appeared to involve the breast gland before removal. The tendency to the involvement of the skin in these tumors was marked, two being actually ulcerated and one other showing marked adherence and brownish discoloration. The ages varied widely from thirty-three to seventy years of age. All were in married women. The duration varied from six months to ten years. Two were of slow growth and two more rapid within the last few months. Discharge from the nipple was not noted and the axillary glands were found enlarged in only one case. Pain was generally present. Amputation was done in three cases and extensive excision in the fourth. The origin of these tumors appeared to be from the connective tissues forming the stroma of the mammary gland. The essential anatomic elements of the mammary gland were merely displaced by their growth and they differ in no respect from sarcoma of a similar character arising in other organs. Their size was smaller than the periductal sarcoma, but with this exception the two forms were with difficulty to be distinguished.

The other non-indigenous tumors of the breast were lipoma and lymphangioma. Three cases of lipoma occurred in the hospital series and one in private practice. They were freely movable and not tender. No enlargement of the glands or abnormality of the nipple could be detected. They were multiple in one case. The ages of the patient varied from twenty to sixty-six years. The duration of the tumors from three to twenty years. They were of slow growth and occasioned no objective symptoms. All of the cases were operated on, excision being done in two and amputation in a third.

A single case of lymphangioma occurred during this decade. This was a cavernous lymphan-

gioma in a girl of sixteen, which started in the axilla and involved the breast only by secondary extension. It was of six years' duration. Examination showed a dense fluctuating tumor the size of a man's head occupying the position of the breast, but being situated behind the gland and extending from there to the axilla and into the neck. The whole mass was removed without amputation of the breast and the patient made good recovery.

SUPERNUMERARY BREAST.

One instance of this condition is included in the series of cases from private practice, and another was accidentally discovered in one of the hospital cases of periductal fibroma. Both occupied a situation at the anterior margin of the axilla; and this appears to be the most common site, although supernumerary breasts in other situations along the so-called "milk-line" from the axilla to the groin, are occasionally reported (Young [31]).

Both cases presented a small collection of glandular tissue without a nipple. No symptoms were produced in either case, and in one the tumor was discovered only in routine physical examination. In the other anxiety was aroused by the presence of the axillary tumor, but was promptly relieved when the correct diagnosis was ascertained.

In neither of these cases was there any evidence in support of the theory that supernumerary breasts are more prone to tumor formation than breasts in a normal condition; and indeed this theory is probably one of those which have been handed down from writer to writer without satisfactory evidence for its support (Martin [32]). The rarity of cases of supernumerary breast (only two occurring in 758 cases) is the probable explanation of this uncertainty in the matter of prognosis.

PLASTIC RESECTION OF THE MAMMARY GLAND.

As Stewart [33] justly says, there is a lamentable and unnecessary difference of opinion as to the treatment of doubtful tumors of the breast.

Many of the tumors are situated in such portion of the gland as to involve disfiguring scars in a conspicuous locality if an incision is made directly over the tumor. Many operations designed for benign tumors involve an amputation of the breast. This unfortunate organ has suffered countless mutilations in times past in conformity with prevailing customs. Thomas [34] first sought to overcome this difficulty by proposing an incision along the lower and outer border of the breast, but details as to his technic are wanting in the original article, and the method does not seem to have been generally adopted.

In the treatment of cysts Abbé [35] has advocated an exploratory puncture, and gives a large number of permanent cures effected by simply evacuating the cyst. McGraw [36] has also written upon the treatment of cysts by aspiration, and in the main agrees with Abbé, although he notes two cases in which he observed the development of cancer after this procedure. Bull [37] also has long been an advocate of aspiration of cysts, and had no cases of cancer following aspiration in his own experience. McGraw's two cases, however, are excellent concrete examples of the theoretical dangers of aspiration.

At one time I was in the habit of using exploratory puncture to determine the nature of a doubtful growth, and for this purpose used a Mixter punch (a long steel cylinder of small caliber with a handle at one end and sharp edges at the other). Richardson, however, later reported cases in which an extension of the cancerous process was observed along the line of puncture; and although I have succeeded in curing many a cyst by puncture, I have abandoned it as a routine practice. In doubtful cases it may cause serious displacement of cancer cells; in cases of cystic disease it disposes only of the larger cysts. I should still use the method, however, in exceptional cases, such as in the presence of a large cyst near the nipple in a small breast which could be easily palpated.

Herbert Snow [38] has recently recommended removal of cystic tumors of the breast by forcible massage. Cysts can undoubtedly be ruptured in this way and permanently cured, but it is not a method of precision, and would be most dangerous advice for general adoption.

Stewart [33] advises an exploratory procedure so planned as to avoid contact of cut lymphatics with any tissues left behind, and any chance of dissemination of cancer cells by pressure before the removal of the breast.

Bloodgood [37] agrees in advising exploratory incision, and states that this operation is the routine treatment of doubtful tumors at the Johns Hopkins Hospital. Curtis [39] and Morris [39] support this recommendation and Morris calls attention to the case with which consent may be obtained for an exploratory operation early in the course of the disease, when the possibility of avoidance of a total amputation can be urged.[40]

The operation which I have gradually elaborated, starting with the so-called Thomas incision, consists in the removal of a V-shaped portion of the gland containing the cyst or tumor, and exploratory radiating incisions in the remainder of the gland. In the early operations I undertook to remove all sections of the gland involved in cystic changes, and in several cases this resulted in removal either of the entire gland or of all but fragments here and there of the cortical portion. These fragments were brought together with catgut sutures placed at certain points, or by a single purse-string suture, so that in the breasts of women possessed of a fair amount of adipose tissue the organ could be reconstructed and the nipple (which previously perhaps had been inverted) could be restored to its normal shape. In this way the outward shape and appearance of the breast could be maintained while the entire mammary gland had been removed. Further experience, however, showed me that this radical measure was in the great majority of cases un-

necessary. The details of the operation as I now perform it are as follows: —

The preliminary incision is longer than that contemplated by Thomas, and, starting at the lower border of the breast, opposite the middle of the outer arc of the lower inner quadrant, it runs along the lower fold and outer margin to the inner border of the axilla, thus severing the lymphatic connections of the breast with the axillary plexus of lymph glands. The incision should be carried down to the lower border of the pectoralis major muscle, which should be freely exposed. The dissection is then carried along through the loose connective tissue which lies between the pectoral fascia and the posterior layer of the fascia in which the mammary gland lies. With the left hand the operator reflects the breast upward and inward so that the posterior surface of the gland becomes exposed in its entire length. The gland tissue can now be seen through the transparent fascia and easily inspected. If cysts are present they are readily observed, as the majority of them lie in the posterior portions of the gland. Usually there are one or two large cysts lying in the same quadrant. This portion can be removed by a V-shaped incision without opening the cysts. The apex of the V lies directly under the nipple in the central portion of the gland. Radiating from this point incisions can be carried into the gland tissue in all directions, exposing and bisecting all small cysts, so that no cyst, however small, remains that has not been laid open by the knife. A second V incision may occasionally be necessary, but this is rarely the case. The next step of the operation, after arresting hemorrhage from the larger vessels, is to close the V-shaped opening with two rows of catgut sutures, one along its anterior borders, and one bringing its posterior edges into contact. The gland is now released from the hand of the operator and dropped back on to the pectoral muscle, and it will be found that the various incised portions of the gland resume their natural positions and fit accurately together. A few sutures may be needed to arrest hemorrhage from small arteries in the gland substance, but this is not usually necessary. The gland should next be anchored to the subjacent pectoral muscle at its outer edge, and still another row of sutures is advisable to hold together the deep layers of the superficial fascia before closing the outer edges of the wound with silkworm gut. The buried sutures are useful in removing strain from the surface suture.

The dressing should be applied so as to produce lateral compression of the two hemispheres, as the ordinary swathe tends to tear the buried gland sutures apart. I have devised for this purpose a bandage which crosses in front and is pinned like a diaper; the ends of each half are then caught into two loops which are attached to suspenders crossing over the shoulders (empire bandage). This bandage can be elaborated into a breast supporter, which is made for me by Messrs. Leach & Greene of Boston. If the breast operated on contains a benign tumor, the tumor can be removed by the V-shaped incision, the double suturing of the gland incision being carried out as before. I have found it better to make a clean V cut even in the cases of the periductal fibromata, as I have always found the capsule of these tumors more closely adherent to the gland tissue than is usually represented to be the case.

In case of exploratory operations for cancer the incision can be carried a little farther from the gland border if necessary and sufficiently deep to sever all lymphatic connections with the axillary lymphatics or those which run through the pectoral muscle. The incision into the posterior surface of the gland, if cancer be found, should be closed by a single suture before proceeding with the major operation.

I have called this operation plastic resection of the mammary gland, as the incision and subsequent sutures are devised with special reference to restoring the gland as nearly as possible to its normal shape and to improve often the outward appearance of the nipple. In case of inversion of the nipple, as is often seen in abnormal involution, the gland tissue should be so laid open from behind that a subcutaneous purse-string suture can be placed around the base of the nipple and force it outward.

I have performed plastic resection of the gland in 66 cases, in 8 of which both breasts were operated on, so that I have performed the operation in all 74 times. The great majority of these operations were for abnormal involution, but in no case have I had any recurrence of cyst formation. It is remarkable how completely all trace of the incisions into the gland tissue disappears. It is usually difficult to tell from the feel, only a few months after the operation, what portion of the gland has been resected. As the outward cicatrix is practically invisible to the patient, the result from a cosmetic point of view is also most satisfactory. In three cases only have I found suppuration of the gland to take place, and this was attributed to infection from the cavity of the cyst. One was a case of large multiple cysts, another was a large cyst near the nipple, and the third was a case of papillary cyst-adenoma near the nipple in an old woman. I have tested many exposed cysts for bacteria, but have invariably obtained negative results. I should, however, advise the operator to avoid opening the larger cysts if possible, and to use catgut for deep ligatures and sutures, as they are quickly absorbed and leave no trace of their presence in the sensitive structure of the gland. I have had stitch abscess in the skin sutures in two cases only, neither of which was in private practice.

As will be seen from my experience in 74 cases, the operation is attended with little risk or discomfort to the patient, who may be assured that it can be performed without a prolonged convalescence and without disfigurement of any kind. I venture, therefore, to offer it to the profession as a satisfactory substitute for the disfiguring exploratory incision on the anterior

surface of the breast, for the uncertainties of puncture, and for the mutilation caused by amputation.

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Original Articles.

NOTES ON FRACTURES AND THEIR TREATMENT.*

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I WISH to bring to your notice not anything radically new, but a number of matters in regard to treatment of fractures in which the point of view has been changing the last few years to correspond to our larger knowledge.

The use of the x-ray has been very general for some years and has not only taught us directly much about diagnosis and treatment, but has also greatly stimulated our observation of fractures in general and our attention to them.

* Read before the Norfolk South District Med. Soc., Feb. 2, 1905.

The greatest direct service of the x-ray in my opinion has been that it has given us a clearer idea of the lesions in ordinary fractures, and has cleared up the pathology of various less usual fractures that previously were obscure. Of late there has been a good deal said as to the routine use of the x-ray, some surgeons even going so far as to talk of malpractice in not using x-ray as a routine. This is sheer nonsense, of course, for it is neither practicable nor at all necessary to use x-rays in the majority of cases in order to gain all diagnostic data that will be of any use in treatment. Our treatment does not call for knowledge of exact direction of fracture planes, etc., nor will it be changed by data regarding them. Before x-rays were discovered very decent and satisfactory fracture work was done, and will still be done, so far as the usual run of cases is concerned.

It is, however, of the greatest service to us that study of large series of x-rays have given us data as to the type lesions in many fractures, such as those of shoulder, wrist, elbow, hip and ankle. We are now in position to utilize previous training in manual examination to much better purpose. It is worth noting that in the hospital at least, dependence on x-ray examination often results in superficial examination, a tendency peculiarly bad in its effects on the training of house officers who now learn less than they should about diagnosis by other means than the x-ray.

There are type fractures (of the carpal scaphoid, in some cases of fracture of the tarsus and of the metatarsals, etc.) where x-rays are practically essential to all of us for certain diagnosis, to say nothing of the considerable number of cases of subperiosteal fractures, of bone cracks, etc., that we can never prove except by skiagraph.

Apart from these special classes it is, I believe, our duty to examine and treat fractures with the aid of the x-ray if it is handy, without it in the vast majority of cases, unless as a later source of information. The time when x-rays should be of most value is not before reduction, but after; not to show what we are dealing with, but whether or no we have accomplished what we think we have.

In all cases where there is any doubt as to proper position we should examine for position with great care, sometime about two weeks after the injury, at a time when errors can still readily be corrected. At this time, unfortunately, there is apt to be a good deal of swelling, often very resistant swelling, and examination by the fingers is very difficult. This is where the skiagraph can do us the best of service, and its use should be cultivated far more than it is to-day, to review results, to determine whether gradual modelling, or reduction, or even open operation is called for.

As a method of determining end results the x-ray is, as has so often been said, very unsatisfactory. Despite all we now know academically about distortions in the pictures they are practically confusing to the most experienced at times — the picture may not represent the facts. Even

if it does give the facts it gives facts only as to the position of the original fractured ends, and not as to the resulting bone, *including callus*.[1] In the past we have reckoned our end-result as to position with the callus included, and no picture that does not reckon with such a result can give us anything that we can fairly compare with what we have known. The x-ray reproaches us with anything less than a perfect anatomical result, but we know that this is not attained or attainable with most fractures. Do not, therefore, take end-result skiagraphs *too* seriously, and *do not* show them to patients who are even less able to make allowances than we are.

Use the x-ray for diagnosis if need be, for correction of treatment always if may be, but judge fracture results as we have previously learned to judge them and not by a plate.

We have spoken of the *subperiosteal fractures*, a class of which one hears much lately. They are common, very common. They are also unimportant. A crack across the lower end of the radius may be called a Colles fracture, but even if the crack is at the classic point, it is in no sense comparable to what Colles described. For all clinical purposes it is as much a sprained wrist as it was ten years ago. In one case (a fracture of the radial shaft, a simple crack), the writer has seen such a fracture actually break loose later, but this chance is remote. In practice these cases do well with or without treatment. Without fixation they may give a larger callus and a soreness that persists a bit longer, that's all.

In children these subperiosteal breaks are interesting from two points of view: first, it is hard to conceive that a young, almost pliable bone should be broken clean across under the periosteum quite as often as it breaks in the greenstick form. The other point is the tendency to confuse greenstick with other subperiosteal breaks. We may have a subperiosteal break in the shaft, say, of the radius, in a young child that needs no reduction, but merely fixation, or we may have a greenstick fracture that *must* be bent back into shape. The criterion is not the existence of a break, but the presence of a deformity.

The usual present practice in greenstick fracture, contrary to what stands in many of the books, is to bend the bone back by direct pressure on the convexity. We used to be told that this could not be done on account of the frayed ends not fitting. They do not fit, but may be driven together and impacted, and this can be done in practically all cases if a fair grip can be obtained on the bone. That it gives better results properly done than breaking the bone through and then setting it, needs no argument. But subperiosteal fractures without deformity need neither form of treatment.

There have come to the writer's notice of late a number of cases of so-called nonunion, and incidentally a good deal of talk about interposed muscle, etc. As a matter of fact this seems to be the rarest cause of failure to unite; the writer has not yet found or seen, or *personally* known of a case where interposed muscle or other soft parts was a cause of nonunion. The fact is that a considerable number of fractures are very slow in uniting, and that no sharp line is drawn clinically between delayed union and nonunion. The more we watch these cases the more we find that most of them are simply cases of delayed union, and that most of them will unite if given time. There are rare cases where there is a formation of atrophied conical bone ends; others where there is an actual pseudarthrosis; others where soft parts are interposed; but these are the rarities. The common failures in union are those in which (*a*) the lack of primary callus due to the mild infection of even a clean compound fracture determines slow union, or those (*b*) where poor apposition gives slow or imperfect union, or still more often those (*c*) in which failure to unite in the usual time is not traceable to any known cause whatever. Class *b* not infrequently calls for reduction; class *a* takes care of itself in time. Class *c* rarely fails of union, but union may be hastened by operation and fixation with wire, or otherwise.

I would not be understood to decry operation in this last class; often it is advisable and useful, though the reason why it helps is not clear; but I do protest against classing successful cases of this sort as cures of "nonunion" by operation. They are not in any proper sense nonunion cases, and should not be so classed, unless *many* months have passed between the injury and the interference by operation.

True nonunion is rare, and is serious and not always curable and should not be confused with the worrisome but less grave cases of mere delay in bone production.

More careful study of end-results is bringing us to a realization of the fact that disability is often not proportionate to malposition. Considerable distortion is not incompatible with excellent function, as many untreated Colles fractures and "gunstock" elbows bear witness, and excellent position may be accompanied by very poor function indeed. Many factors enter in, but there are two that are given far too little attention. First comes the question of age. Children recover motion to normal range and perfect function in almost all fractures save where there is considerable bony deformity near joints. Young adults do less well, and fractures of almost any bone in elderly people leave permanent, even if slight, disability. My attention was first called forcibly to this in looking up end-results in a series of elbow fractures in children a few years ago. The results were remarkably good, almost irrespective of the excellence of reduction, and contrast surprisingly with results of like injuries in adults. Age *per se* is an important item in prognosis.

The other neglected factor is that of contractures of muscles and capsule from long fixation after injury. We have all seen the results of this

[1] For all practical purposes it is literally true that callus does not show even after union (clinically) is solid.

in the cases of Colles fracture treated by older methods, but have not yet fully learned how important a factor this is in determining disability in fractures of all sorts, at least in adults.

Latterly, the writer has been looking into the causes of permanent disability in fractures of the lower leg. Those of us who have watched many of these cases know that there is a lamentable percentage who do not do well at all. It has often been assumed that this was a result of poor reductions, and we have read a good deal about shortening and the "riding fragment," etc. It is, of course, true that excessively bad reductions give bad results. As a matter of fact, however, I do not believe this to be the most important item. In the last four years I have been watching a good many cases and have examined final conditions in some forty *poor* results of leg fractures, and while I am not ready to report final conclusions it seems clear that the disability in this class of cases may be referred back to definite causes much as follows:

SHORTENING.

This is a rare cause of disability so far as lower leg fractures are concerned. It is a well-known fact that shortening *per se* does not cause even a limp with less than about one inch of shortening. Whether the shortening is in thigh or leg is unimportant, for up to a reasonable limit it is compensated for, in either case, by tilting of the pelvis. I have not yet seen a case where leg fracture resulted in shortening, such as would alone account for any real disability.

OVERLAPPING — MALUNION.

Very frequently leg fractures heal with a distinct overlap of one fragment — not an overlap of the whole thickness of the bone, but of the tip of a fragment (oftenest the upper) of an oblique fracture. This is the riding fragment so much written of by Golding Bird and others. I have, from study of the cases referred to, a profound disbelief in its importance. Here and there cases turn up in which the overlap has been such that the bone, even with its callus, is no longer a continuous shaft, but shows a broken line. These cases at times show disability with some pain in the bone apparently due to structural weakness, beside foot symptoms. As a rule, however, the cases with overlapping which show disability belong obviously to those in which adhesions or contractions or displacement of the line of weight-bearing is present, a displacement more often due, in fact, to angular displacement than to the overlap as such.

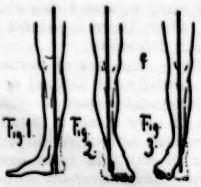
DISPLACEMENT OF WEIGHT-BEARING LINE.

Forward displacement. — Where there is displacement forward as in Fig. 1, we have

(*a*) A mechanical handicap to progression, equivalent to a hyperextension of the knee in a position which should give only a straight-line extension, and hence a failure to flex the knee smoothly at the end of the step.

(*b*) A mechanical disadvantage in standing, owing to the same cause, throwing strain on muscles and tendons.

(*c*) An interference with the line of pull of gastrocnemius and soleus through the tendo Achillis.



These elements result in a limp, always, I think, present where this deformity is considerable. The disability is not necessarily proportionate to the limp. This deformity is very common, owing largely to the sagging of fragments when the padding of the splint or plaster ceases to be effective. *Per se* the deformity is not extremely disabling as a rule.

Backward displacement with *anterior* bowing, is less common. I know nothing of its results in practice. A like deformity is common in rickets and results in little more than a tendency to an awkward, shambling gait. Of itself, the displacement alone would doubtless result in about the same thing after fracture as with this deformity from disease.

Outward bowing with *inward displacement* (see Fig. 2) is not infrequent, especially with fractures low down near the ankle. In minor grade it is of no consequence, and if we are to allow any deviation from the straight line, it may most safely be in this direction. Such deviation in major degree, however, throws the foot far inward, forces the patient to walk almost entirely on the outside of the foot and results in lameness and stiffness from the muscle strain. In a few such cases the lameness so resulting was considerable.

Inward bowing is, however, far more often disastrous just as it is far more usually met with. The line of weight bearing of the leg should normally fall well within the area where the foot touches the floor. It needs but little deviation in axis or other malposition to carry this line entirely to the inner side of the surface of the sole (see Fig. 3). If this occurs, or even if the weight-bearing line is simply carried inward without going off the sole area, we almost inevitably have disability. The musculature supporting the arch has barely more than enough power in most of us at best. Under circumstances increasing its work in any way the arch is imperfectly supported and we have the symptoms of tendon and muscle strain that we classify as "flat" or, more properly, "weak" foot. The development of this trouble is favored by the atrophic or atonic condition of the muscles supporting the arch that necessarily follows long fixation and disuse.

Here and there where there is absolutely no deformity this atrophy alone, with the consequent early strain of weight-bearing falling on muscles as yet unfit, results in the same flat foot with the same symptoms. At times actual flat foot develops; at times we have the lameness and limitation of motion, sometimes classed as contracted foot, where there is painful limitation of motion without deformity.

Such rigidity — the loss of normal motion in the joints — (usually the ankles) proved to be a surprisingly frequent cause of disability. The simple result of over strain is not, however, the cause of the most serious rigidity. Over-strain results either in flat foot from overload, or in contracted foot from over-use — both are conditions remediable by rest first, and gradual use under support later. Either form may show rigidity, but neither causes in the rule any permanent and incurable rigidity such as is only too common and serious.

In some cases this permanent rigidity was accompanied by deformity, in others not, and, in either case, the disability was stated to be mainly in the ankle, and to consist of a lameness coming on after short use, especially on irregular ground. These cases did not have flat foot, but simply a loss of motion in the ankle, a loss of dorsal flexion and of the lateral movements, which made every step a strain on tendons and muscles already tight and sensitive. There seemed no obvious reason why the joint should be stiff in these cases; in only two of them did the stiffness seem to be reflex to an arthritis, in none was it associated with any considerable breaking down of the arch, and there seemed usually to be no sort of relation to the amount of deformity; some of them showed no deformity at all at the site of fracture. Dr. E. G. Brackett kindly saw and studied several of these cases for me, and we attempted treatment by massage, stretching, etc.; they proved (unlike the flat and contracted feet) peculiarly resistant, and in no case where this sort of permanent loss of motion from contracture was present did we achieve any considerable improvement.

Two facts in regard to these cases seem illuminating:

(*a*) In a general way the patient's age was a factor; children seem not to get this form of contracture and old people are somewhat more often affected than are young adults.

(*b*) The stiffness of the ankle while independent of exact fracture lesion or of deformity was never considerable, save in fractures of the lower two thirds of the leg. Fractures of the upper third resulted in loss of motion at the knee rather than the ankle, equally distinct but less disabling.

While this sort of disability occurred in some perfectly reduced fractures and in some which had seemed to be of minor gravity, it did not occur in any where the fixation by apparatus had been very short and it was present in a considerable proportion of the cases of slow union where fixation had been unusually long continued.

It seems pretty obvious that long fixation is a factor; I believe it to be the important factor, though, of course, such long fixations may not always prevent slow regaining of practically perfect motion.

In general there is no question to-day that fixation of injured limbs may eventually cause permanent contracture, whatever may be possible in the way of long fixation of normal joints without damage.

It seems clear to the writer that this class of cases parallel the very bad results in Colles, fracture under old methods, and that we must learn to make general application of what took so long to learn in regard to wrist fractures. We must recognize that, in adults at least, long fixation of an injured limb gives rigidity apparently from muscle shortening (and, perhaps, also by capsular change) that is practically irremediable.

We cannot begin to use a damaged leg as early as a fractured wrist, but we can seek, at the earliest opportunity, to begin active and passive motion of the contiguous joints, and, until we give some attention to this early mobilization, instead of giving all our attention to attempting perfect repositions, putting limbs in plaster for many weeks, until then we shall have a good many surprisingly poor results in leg fractures.

The same principle is applicable to many other fractures — of the shoulder, for instance, and the writer expects to see before many years not exactly an adoption of the French "massage" treatment, but an approximation to it that will greatly shorten the period of absolute immobilization.

As to massage in fracture treatment the writer is not an enthusiast. As used hereabouts it is begun only after union is perfectly solid, and is used with passive motion. Some years ago the writer had a more than usually good opportunity to control results of a considerable series of fractures, treating some with careful and skillful massage and passive motion and some without. In certain cases of Colles' fracture and shoulder fractures massage and passive motion seemed to be useful. In most cases, however, the improvement seemed to take place about as rapidly without as with it, and active motion by the patient seemed to give equally good results without the occasional setbacks that even careful massage is apt to induce.

Massage applied, not as we use it, but from the beginning of treatment, seems to have distinct advantages. The writer has no experience with it, but is inclined to believe that it will play a rôle in our future treatment when our ultra-conservative professional standard comes to allow us to try it freely and to learn to understand the indications for its use.

Certain French surgeons have used it very freely, and the data seem to prove satisfactory union, with preservation of excellent nutrition in the surrounding parts, and with good and early restoration of motion. The only real drawback seems to be the chance of disturbing the position once attained.

The so-called modelling of fractures is a method not so frequently used as it should be. In many cases, especially in fractures of the long shafts, accurate position cannot be maintained at first, but after muscle spasm has subsided it is possible to attain admirable results by gradual "modelling" of the fracture with the hands. If this is done slowly and carefully it causes but little pain and surprising results are attainable. Especially in fractures of the forearm in very fat or muscular subjects this method has proved of use.

Operative treatment of fractures is a subject of moment to-day. We realize that operation is legitimate in many cases, but just what cases we can benefit, and at what stage intervention is to take place, we are not yet always clear about.

About compound fractures there is no dispute. We should not only try to secure aseptic healing, but, reasonably secure of such healing, should do all we know to secure the best reposition. There is a limit to this and there are many compound fractures with crushed and dirty tissues in which prolonged manipulations and the introduction of wire or other sutures are unwise in view of the chances of interference with clean healing. In most clean compound fractures (and these are the majority) we have only a small wound leading to a large cavity filled with bloodclot in which lie the broken bone ends. We must lay this cavity wide open to clean it, and while it is open must care for the adjustment of the bones. Usually they can be brought into place and held without trouble, but if drilling and suture with kangaroo tendon or wire is needful to hold them there is no reason against it. The writer has done this repeatedly and as yet without bad results.

Apart from compound fractures the field for immediate operation is small. The chance of sepsis seems proved to be much more in immediate operation than if we postpone operation for seven to fourteen days to allow for absorption of blood clot, etc. For this reason fractures of the patella, olecranon, etc., are not to be operated on immediately. Only where there is some contra-indication to waiting should we immediately cut in. This includes occasional cases

(*a*) Where early callus formation renders reduction after a week or two far more difficult, *e. g.*, in depressed nasal or malar fractures.

(*b*) Where there is a dislocation complicating the fracture, — not reducible without operation, — *e. g.*, fracture of the surgical neck of the humerus with shoulder luxation.

(*c*) Where complications exist, *e. g.*, extreme hematoma in leg fracture, threatening the blood supply.

E. g., otherwise irreducible separation of the lower epiphysis of the femur with pressure on vessels.

E. g., apparent or very probable implication of nerve trunks between bone ends.

E. g., where there is a possibly remediable cord injury in spine fracture.

E. g., in the majority of skull fractures where the brain condition is important, the skull unimportant, and sepsis infrequent.

Secondary operations should be far more frequent than primary and more frequent than at present. Broadly speaking all cases should be operated excepting for definite contra-indications, in which a trial of the ordinary reduction and fixation methods does not promise a functionally good result. Here it is that reviews with the x-ray at two weeks or so are of such value in estimating results.

There are, of course, many cases where improvement of result is practicable by simple reduction without incision, or by "modelling," but it is the writer's belief that no fracture, at least of the shaft of the long bones, should be allowed to remain in really bad position till it unites, without serious consideration of the prospects of improvement by open operation. One neglected argument in favor of operation is that bones in bad position will take longer to unite *solidly* if let alone than if operated and replaced, to say nothing of the better results.

Many fractures of the humerus and of the lower leg, a few fractures of the forearm bones, rarely a femoral fracture, and a considerable number of unmanageable metacarpal fractures, etc., come up for consideration on this basis. Bad position in the neighborhood of joints is a reason for operation, but often the advisability of such operation is debatable. Malposition in fractures of the surgical neck of the humerus, for example, is of so little moment in later function as hardly to warrant operation; separation of the epiphysis at the same point may be definitely operable on account of the matter of later growth. As to elbow fractures there are no results to date to encourage hasty interference except in a few supracondylar fractures, and, perhaps, in other cases for removal of superfluous fragments. Wrist fractures are amenable to reduction without incision for many weeks after injury, and incision is not often justified. At the knee operation will usually be wise in separation of the lower femoral epiphysis, rarely necessary or useful in the oblique fractures occurring here, or in the condylar fractures, and rarely wise in the fractures of the upper tibial end. At the ankle the risks of incision are better than persistent sliding of oblique fragments, or than anterior or posterior dislocation in Pott's fracture, and the results are promising, but, in fact, proper skill in handling apparatus should usually avoid such operation.

Non-union, or delayed union, has already been considered, but there is a special form of non-union, namely in joint fractures, where bony union can usually be secured only by operation. The fractures of patella and olecranon are well recognized as belonging in this class, and the indications for operation are pretty well agreed on. In short, patellar fractures are operable in general in all cases where there is considerable separation, and olecranon fractures, according to the same rule.

In both these fractures the risks of operation (not inconsiderable in patellar fractures) are to be taken in suitable cases in the interest of a greatly shortened convalescence and an improved functional result, but we must not forget that a very tolerable functional result with fibrous union is almost certain in due time without operation.

In those loose fractures of the hip, on the other hand, where bony union is not to be expected and where the results without operation are very bad indeed, the results of the relatively few operations the writer has known of are very satisfactory. The profession has been curiously slow to accept these cases as operable, despite the bad results without operation even where there are no real contra-indications to operative interference.

Fractures of the carpus and certain fractures of the external condyle at the elbow in children show the same tendency to nonunion, but in neither case is early operation called for— simply because we can do nothing but excise the fragment (at least nothing else has been successfully undertaken as yet) and because some of the elbows do unite by bone after long delay, and some of the carpal fractures give a fair or good result with fibrous union alone.

As regards *late* operations, we have but two indications,— disability or deformity due to apparently remediable displacement, and long delayed union. Of the latter we have already spoken. As to deformity nothing need be said about the simple cases of bad angular union except that it is not necessarily wise to correct deformity from fracture at the exact point of the fracture. It may be well, for instance, to do osteotomy for gunstock elbow or supramalleolar osteotomy for a twisted ankle at the classic point above the joint entirely irrespective of the site of old damage.

A word about resistance of soft parts: There is no reason whatever why a certain amount of tenotomy, or preferably open tendon lengthening, should not be done to make reduction practicable, though, of course, this operation will usually be limited to the tendo Achillis and the adductor tendons, and even these are not likely to be cut save in exceptional instances.

Shortening from overlap, however, cannot be corrected by any tenotomy that is not unjustifiably extensive, but while shortening cannot be remedied, *deformity* from overlap can be remedied often very satisfactorily, leaving the shortening, by fitting the fragments to one another so as to reconstitute a shortened shaft of normal contour. Operation on fractures involving joints must usually be limited to removal of obstructing fragments. Two rules are to be observed, — the minimal incision of the capsule and care in never leaving *two* denuded joint surfaces. Broadly speaking, raw bone opposite normal articular cartilage means a mobile joint — *two* raw surfaces give fibrous ankylosis.

Late operations for malunion have, up to date, been limited subsantially to *osteotomy:*

(*a*) For Pott's and other ankle fractures; (*b*) for very bad results of Colles' fracture; (*c*) for gunstock elbow deformity; (*d*) for knock knee or outward deviation of lower leg and foot — or for bow-leg or backward bowing after fracture; (*e*) for angular deformity of the femoral shaft.

Denudation and fixation for persistent nonunion in certain fractures of the femoral neck, and other pseudarthrosis.

Excision of loose fragments in or about joints, *e. g.*, external condyle of the humerus.

Excision of joints in ankylosis of shoulder or elbow.

In closing the writer would lay special stress on three points still too new to have met common acceptance:

(*a*) That a better recognition of the advantage of early mobilization will give better functional results.

(*b*) That a review of position (with x-ray, if possible) should be a routine at a time when correction is still readily possible by open if not by closed methods.

(*c*) That many bad end-results of fractures are remediable by operation, that such operations are under proper conditions devoid of any considerable risk, and that the field for such corrective operations has increased and is still increasing with our greater experience and wider knowledge of the results obtainable.

CONTRIBUTION TO THE STUDY OF SPINAL SURGERY.

ONE SUCCESSFUL AND ONE UNSUCCESSFUL OPERATION FOR REMOVAL OF TUMOR.

BY G. L. WALTON, M.D., AND W. E. PAUL, M.D., BOSTON.

IN case of spinal as well as intracranial neoplasm, the hopes raised by the clinical picture are frequently disappointed on the resort to operation. Of this disappointment, the writers have had their share. The successful result of operation in one of the cases here reported, and the anatomical findings in the second, have been welcomed by way of reassurance, both as regards the advisability of operation in progressive and otherwise hopeless cases provided the symptoms suggest, though they may not absolutely establish, the presence of a new growth. This position has been still further strengthened by a recent brilliantly successful case of Dr. Putnam's, operated on by Dr. Warren, which we had the privilege of seeing in consultation, and which they will doubtless report later.

In the first of the two cases, the clinical picture was that of severe pain in the neck and arm, accompanied by local wasting, numbness and loss of power in the arm, and by rigidity of the neck. Operation disclosed a myeloma involving the laminæ and pressing on the dura in the lower cervical reigon; its removal was followed by relief of pain and rapid improvement of motor and sensory symptoms.

In the second case, pain centering in the right arm, accompanied by a modified Brown-Séquard paralysis of gradual onset and rapid progression,

led to the diagnosis of tumor pressing on the cord unilaterally in the lower cervical region. Removal of the vertebral arches failed to disclose the tumor, which on autopsy was found to project posteriorly from the anterior wall of the spinal canal at the level of operation.

Case I. — H. C. Seen at the Massachusetts General Hospital at the request of Dr. Painter, to whom we are indebted for permission to publish the case. The following history was taken by Dr. Painter Oct. 28, 1904:

A man of forty-nine. Pain began about two years ago in arms, legs and shoulders, not severe enough to keep him from work. In the past two months pain has markedly increased; he has been to several doctors without relief, and is now taking one half gr. morphia a day for pain, and is not entirely relieved. Is losing weight rapidly, has no appetite, bowels move with medicine. The pain is localized about the spine at about the level of the fifth to the seventh cervical vertebræ, extends from this point into the left arm, involving the shoulder, movements of which increase the pain. The patient gets most relief by inclining the head to the left and putting the hand up to the left cheek. Tingling and prickling sensations were the first things noticed in the arm, worse in the little finger, gradually spreading, involving now practically the whole arm, distinctly worse on the ulnar side, corresponding fairly well to the distribution of the ulnar nerve. Has noticed that his arm, especially the hand, was getting weaker than the right, also feels the cold in the left hand very much. Except for the pain in the arm, he would feel well.

Examination showed a well-developed, somewhat thin man. The spine showed motions restricted in all directions in the cervical region. The arms showed no marked atrophy. The voluntary movements were all limited, but passive movements showed no involvement of the shoulder, elbow or wrist joints. The left hand was distinctly colder than the right. He felt the point of a pencil distinctly less well on the inner than on the outer side of the arm. The knee jerks were normal.

He was given general tonic treatment, potassium iodide, 10 grs., three times daily and increasing, also codiene, ½ gr. three times daily if necessary, 3 grs. at bed time, and to omit the morphia if possible.

Seen by Dr. G. L. Walton who advised exploration on the chance of the trouble being a neoplasm.

The following items may be added from the hospital records:

Examination shows movements of the neck restricted in twisting and in lateral bending, especially to the left, marked wasting of the interrossi of the left hand, and very feeble grasp. Patient cannot approximate the thumb and fingers of the left hand. There is loss of the different varieties of sensation on the ulnar side of the left arm and hand. Operation advised.

Operation. — The operation was performed by Dr. J. C. Munro at the Carney Hospital, Nov. 21, 1904. Dr. W. N. Bullard was present.

A median incision was made over the lower cervical and upper dorsal spines. The sixth and seventh (?) laminæ removed. The seventh (first dorsal ?) lamina on the left was rough on the outer surface and the upper edge anteriorly was eaten away by a soft gelatinous growth that was pushing out into the muscles and pressing upon the dura. The lamina was removed and the growth was found to extend anteriorly and laterally into a smooth cavity, about one-half inch in diameter, anterior to the level of the articular processes. This growth was curetted out entirely so far as seen and the dura freed from pressure. The dura itself appeared healthy and translucent and was not opened. There was considerable oozing from the cavity, requiring temporary packing of iodoform gauze. The wound was closed in layers allowing for the drains. Patient was in good condition at the close of the operation.

Dec. 5, 1904. The patient went home to-day, general condition much improved, wound firm and healed. No narcotic has been required since operation. The pain in the arm is practically gone, slight pressure below the elbow relieves what slight pain the patient now has. The sensation of hand is much improved, also the grasp. The patient was referred to the out-patient department for electrical treatment, and was given strichnine sulphate, 1-60 gr. three times daily for home treatment.

Improvement was continuous and there has been no return to the previous symptoms. We have recently learned, however, from Dr. Painter, that signs have appeared of recurrence of the growth in other localities. This was, unfortunately, to be expected from its nature.

Case II. L. B., fifty-three; married; travelling man; was first seen by Dr. Paul in consultation with Dr. Morris, in September, 1904.

The chief complaint was of pain between the shoulders and down the arms; jumping in character, worse at night and on lying down, at intervals of an hour, lasting about ten minutes, of two months' duration and gradual onset. There was some dull pains also in the legs and thighs with subjective numbness in lower extremities with sensation of pins and needles; and since Sept. 5 there had been a rather abrupt onset of momentary sharp pains in the thighs. The power in the legs had lessened during the preceding month; the patient tired easily and found it hard to walk up or down stairs. There has been loss of flesh (twenty pounds). Sensitiveness to cold has increased; there is burning in the feet at times and coldness of the hands. There has been some loss of sexual power, but no bladder trouble; there has been no girdle feeling, no headache, no disturbance of the mind or special senses.

Physical examination showed a rather stout man with slow and feebie gait, standing well on both feet but unable to stand on either alone. Movements of the hands were normal, but not strong. The movements of the neck were not limited.

Reflexes. — The knee jerk was lively, especially on the right. Plantar reflex consisted of very slight flexion of the little toe only to the right, on the left there was rather slow flexion of all toes. The cremaster reflex was lively, greater on the left. The pupils were normal. The urine was normal.

The patient was put upon specific treatment, with gradual increase of the iodide to 120 grs. three times a day, on account of a history of infection in 1899. No amelioration of symptoms followed; the pains increased and became severe enough to wake him in the night.

On Oct. 26, he had begun to drag the right foot, and to find more difficulty in walking. Both hands had now become weak, and numbness was complained of in the abdomen and thighs. Examination at this time showed the right leg cooler than theleft, distinct toe drop on the right, loss of pain and temperature sense in the left leg, and impairment of pain and temperature sense on both sides of the trunk, the touch being everywhere felt though not being quite natural. The anesthesia of the trunk reached the height of the third or fourth dorsal vertebra behind and the level of the xiphoid in front. Muscle sense was unimpaired in the feet.

The patient was referred to the Massachusetts General Hospital for observation and possible operation in view of the possibility of intraspinal neoplasm. He entered the service of Dr. Fitz with whom he was seen in consultation by the neurological staff. The distribu-

tion of symptoms caused some variation in diagnosis, but in view of the rapidly increasing paralysis there was general consent to exploratory operation. The patient, able to walk up stairs at entrance became in a short time totally paraplegic and helpless, spasticity with Babinski appearing first in the right and then in the left leg. The blood count showed 14,800 whites, hemoglobin 85%. The day after admission sugar 2.3% appeared in the urine, previously normal, including the examination made at entrance to the hospital.

Operation. — The patient was operated on by Dr. F. B. Harrington. An incision was made from the sixth cervical to the third dorsal vetebræ, the muscles drawn aside and the laminæ exposed. The lamina of the second dorsal was cut with a small saw about one-half inch from the spinous process, the interspinous ligament was severed and the process with laminæ removed. The laminæ of the first dorsal and seventh cervical vertebræ were resected and removed with the



spinous processes. A considerable layer of fat overlaid the dura. On incision of the dura there was a free escape of cerebrospinal fluid. The cord appeared normal. The muscles were closed with interrupted sutures, a drain having been inserted. The wound was closed about the wick with interrupted silkworm gut.

The patient's condition was poor during the operation and 1-30 gr. of strychnia was injected and repeated after his removal to the ward. He was given a shock enema, heaters were applied and the foot of the bed raised. The patient rallied somewhat after a subpectoral salt effusion and the injection of adrenalin and atropin. Oxygen was given five minutes out of every half hour. Dyspnea suddenly appeared at five the following morning and the patient died suddenly at 9.40 A.M.

Autopsy. — The autopsy was made by Dr. Oscar Richardson whose description is as follows:

At a point situated just posterior to the intravertebral cartilage between the bodies of the sixth and seventh cervical vertebræ, a small, rounded, firm, slightly elastic mass bulges backward and presses on the cord forming a depression in it about 15 mm. in length and 12 mm. in width and 4 mm. in greatest depth. The depression is concave corresponding with the convex surface of the bulging mass and is situate mainly in the right half of the cord. The bulging mass is also mainly situated to the right of the median line of the bodies of the vertebræ and the dura is closely applied over it.

There is another minute slightly bulging mass similar in character to the one described above and which possibly very slightly depresses the cord. It is situated to the right of the median line and just posterior to the intravertebral cartilage between the fifth and sixth cervical vertebræ.

The cord over the larger bulging mass and opposite the marked depression bulges somewhat posteriorly and appears to be slightly widened. The larger mass which decidedly depresses the cord measures about 2 cm. in length, 1.5 cm. in width and 6 mm. in thickness. On section the tissue of the bulging mass is found practically continuous with the tissue of the disc and of about the same color and consistency.

The cord on section shows nothing in addition to the depression mentioned except that a short distance below the level of the seventh cervical vertebra the cord, over a length of about 5 cm., shows here and there along this portion, a few small red areas apparently situated in the anterior part of the cord.

Microscopical examination shows the tissue of the intravertebral disc extending into and lost in the tissues of the tumor mass. The tissue of the mass at its base is fibro-cartilaginous in nature and in its upper portions shows connective tissue, presenting here and there several spaces which, from the elasticity of the tissues at the time of the autopsy, probably contained some sort of fluid.

This is not the first time that bilateral distribution of anesthesia in the trunk has been observed by the writers in case of otherwise fairly typical Brown-Séquard distribution. This observation would suggest the possibility that the sensory fibres supplying the trunk do not follow their diagrammatic representation. We had some hope that the examination of the cord above and below the tumor would throw light upon the subject through the secondary degeneration of nerve tracts. Dr. Wright examined the cord, however, by his rapid method of freezing and staining, without revealing secondary degeneration in either the sensory or motor tracts.

The fact that no secondary degenerations appeared in the cord furnishes still further encouragement for operation upon spinal tumors extraneous to the cord. So long as the cord receives no irreparable damage, there is, of course, hope of perfect relief after removal of pressure, and it is not impossible even in this case, though the tumor was not removed, that the mere relief of pressure by removal of the laminæ might, perhaps, have been followed by recovery of function and cessation of pain if the patient had survived the operation.

The comparison of the findings and the results of the cases of operation for spinal tumor which have come under the observation of the writers with those of operation for cerebral tumor, would

indicate a much more favorable outlook for spinal than for cerebral intervention, and yet, the occasional successful result recorded even in the field of cerebral surgery would warrant free recourse to the knife in cases of such otherwise unfavorable prognosis.

In deciding upon the general proposition of the attitude one should take, with regard to cases hopeless without operation and offering few and doubtful hopes if exploration is attempted, it seems desirable that one should determine on a general rule in such cases and follow it. For ourselves we believe in giving the benefit of the doubt to operation in all such cases for the following reasons:

First, there is the bald fact that without interference we have to give a hopeless prognosis.

Secondly, in ruling out operation, we deny the patient and the family a legitimate attempt to ameliorate discomforts if not to effect a cure.

Third, if out of many operations, one case only is successful, the result, it seems to us, justifies the endeavor.

Fourth, if selected cases only are operated upon, there is great danger that the present limitation of our diagnostic criteria would cause us to overlook the case in which operation would have been most brilliantly successful.

THE DUTIES OF THE STATE WITH REFERENCE TO EPILEPTICS.*

BY MAX MAILHOUSE, M.D., NEW HAVEN, CONN.

THE fact that an epileptic may at any time exhibit symptoms which may possibly result in the death of the patient or lead to injury to others, or even homicide, imposes a duty upon the State no less weighty than that of the care and treatment of the insane. Indeed, it might be affirmed that the obligation to detect the disease in, and care for, some epileptics, is greater even than is the case with many insane; for the dangers to life in the latter are readily apparent, while among the former the danger frequently comes on as might lightning out of a clear sky, in so far as the temporary environment of the epileptic is concerned.

In order that we may take a practical view of the subject under discussion, let us suppose a case of ordinary grand mal epilepsy, and then some of its psychical eventualities and possibilities: the patient, say a man twenty-five years of age, is seized with an attack upon the public highway, a crowded thoroughfare for example, a not infrequent occurrence. With or without a premonitory cry, which is sometimes a heart-rending shriek, he falls to the ground unconscious, and in a tonic spasm, possibly with a considerable lateral twist to head and body. The eyes may be open and pupils dilated. The face becomes flushed, the features distorted, chest becomes fixed and respiration ceases with the intensity of the spasm. Next, with gradually increasing severity, violent contractions of all the muscles of the body set in, accompanied by frothing at the mouth, often by biting of the tongue, and after a period of possibly a minute or more, these phenomena cease, general relaxation occurs and the patient falls asleep.

What a sight for the passers-by, for men, women, and children! What a crowd gathers, and what a group of faces to look upon! Fear in some, sympathy in others, eagerness to help, without knowing what to do, in others. In all, a feeling that public action in the direction of the prevention of such exhibitions would be a boon to the sufferer and a decided benefit to the community. Such a feeling must, indeed, be enhanced should the patient chance to fall in front of a trolley car, automobile, railway train at a station, or down a cellar-way bordering upon the street, or from a steamboat or pier. How much more would that feeling be intensified were we cognizant of the fact that such a patient might be the motorman of the trolley car, or *chauffeur* of the automobile, or engineer of the train or steamboat, and we the passengers. Indeed, the public would refuse to place itself in such peril were it cognizant of the conditions. Once made fully cognizant of the possibilities, can any one doubt that the public will readily take steps to anticipate them?

The attack may be modified in degree and kind so that there may be little or no violent muscular activity, but the disturbance of consciousness may be great without, however, apparent loss. That is to say, the psyche may take on an independent action entirely foreign to the nature and personality of the epileptic when free from an attack, and this altered state of consciousness may lead to acts more or less harmful to patient or bystander. Indeed, murder may be committed while the epileptic is in this abnormal mental condition, particularly if the case be one of epileptic mania, which form is more likely to follow a mild than a severe paroxysm.

That such conditions do exist, alienists, neurologists, and frequently general practitioners well know.

The harm and dangers with epileptics are manifold, and may be classified under several heads:

First, those to the patient himself.

Second, those to the public, the witnesses of the attack, and others.

Third, those to the family, and

Fourth, those to the State.

First, the dangers to the patient are readily apparent and vary from slight or severe bruises to dislocations, fractures, cerebral hemorrhage with resulting palsy, and, in cases of status, to death from exhaustion. Death from asphyxia may occur during an attack at night from the turning of the patient upon the face and the burying of it in the pillow. Moreover, in other types of the disease, the patient may wander from home and possibly ruin himself financially, in addition to exposing himself to other dangers.

Furthermore, his social life is threatened, in part

* Read at the annual meeting of the National Association for the Study of Epilepsy, held in Boston, Nov. 22, 1904.

on account of his own knowledge of his affliction, and hence his wise withdrawal from social functions, in part also from being ostracized by his acquaintances, who may fear his going into an attack while in their presence. Many occupations, yes, most occupations, are closed against him, and hence opportunity is denied him.

Second, the dangers to onlookers, or even passers-by, may consist in their becoming the subjects of unprovoked assault, which may be severe in degree. Furthermore, there is the danger in a predisposed individual of the onset of an epilepsy, an attack of hysteria, or the beginning of an endless train of neurasthenic symptoms, as a consequence of such a sight or assault. An epileptic may become the cause of much trouble and annoyance to hotels, theatres, railroads, and business men, either from *grand mal* attacks, attacks of psychic epilepsy, post epileptic automatism, or epileptic mania.

In so far as the members of the family are concerned, they are subject to the same experiences as others, but, in addition, to the possibilities of his upsetting lamps, falling on stoves, etc.; and the knowledge that he might perform some dreadful act while they are asleep renders their lives perpetual nightmares and keeps them continually in anxiety. They never know what he may do next. There is always some one member of the family more or less constantly delegated to keep an eye on the patient, and hence, as a result of the existence of the dread epilepsy, two individuals are rendered practically more or less useless to the community, and hence unproductive so far as material income is concerned. Furthermore, as time goes on and the attacks increase in frequency, mental deterioration with lack of moral control renders toleration difficult. Education and occupation make for the betterment of all epileptics. *Mens sana in corpore sano* refers as well to this class of individuals as to others. Properly selected exercises make for the well-being of the epileptic.

The dangers to the State include, of course, all the dangers common to its citizens, — assaults, homicides, sudden deaths, the above-mentioned dangers from the officiating of epileptics in transportation of many lives, the marriage of epileptics, and the resulting birth of degenerates and those predisposed to insanity. In addition, it may be mentioned that as the general practitioner very frequently takes but little interest in a case of epilepsy and treats it indifferently, these cases go from bad to worse, become stuporous from bromism, or possibly opium, or both, and not infrequently end by falling into the hands of charlatans.

The duty of the State is now plain. The fact that the prognosis is far better when the attacks have been going on but a short time imposes a very apparent duty upon some one. Whose should it be?

If the guardians of the peace see an intoxicated individual, they send him home or place him under arrest, both to protect him from injury, as well as to protect the public, and remove an offence to the sight. A lunatic is removed from intercourse with the public for similar reasons. An individual with a contagious disease is quarantined in order to prevent the spread of the disease to others, and incidentally he receives superior attention, owing to his isolation and the care given by specially trained nurses and physicians. For all of these conditions the State has provided, from various motives. Now, here under discussion is a class with a known disease, with its possible more or less serious consequences to the patient and the public, well known to alienist, neurologist, almshouse keeper and often to jurists. Why might not, why should not the State bestir itself and say to this class of individuals, "We will take steps to guard you against harm from your infirmity; we will guard your friends and the public from like harm; we will care for you in order that the frequency and intensity of your attacks may be diminished, that your mental condition may be improved, and that you may possibly be brought to such a condition of betterment that you may become, in a considerable degree, self-supporting." To the family and friends the State can say, "We will render the afflicted one harmless to himself, so far as is possible, and to others; will segregate him, and thus prevent propagation of feeble-minded, insane and degenerate; we will study the disease, investigate conditions under which it arises, delve into the mysteries of its nature, and thus help to improve the mental and moral conditions of the race."

Reports of Societies.

THE AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY.

ELEVENTH ANNUAL MEETING,
HELD AT BOSTON, MASS., JUNE 5, 6, AND 7, 1905.

THE PRESIDENT, DR. FREDERIC C. COBB of Boston, in the chair.

DR. FREDERICK CHEEVER SHATTUCK, of the Harvard Medical School, in a felicitous opening address, welcomed the Society on behalf of the medical profession of the city of Boston.

DR. FREDERIC C. COBB, in his address, said the foundations of this society, and its phenomenal success, rested upon this one principle: to be fair to all, and to give to every worthy specialist the opportunity to demonstrate his power, to meet others, and to exchange views. This was the essence of true democracy, and it could only be a failure when self-seeking and demagogism took the place of public spirit and a desire for truth.

DR. FRANK B. SPRAGUE of Providence, R. I., exhibited a case of tympano-mastoid exenteration, showing healing of cavity by blood-clot, and wound by subcutaneous silk suture.

DR. O. B. DOUGLAS of Concord, N. H., showed a case of angio-neurotic edema.

DR. CHEVALIER JACKSON of Pittsburg, Pa., exhibited a number of specimens and new instruments.

OBSTRUCTION OF THE EUSTACHIAN TUBE A FACTOR IN POST-OPERATIVE MASTOID FISTULA, AND IN CHRONIC SUPPURATION OF THE MIDDLE EAR.

Dr. Thomas Hubbard of Toledo, Ohio, said his attention was called to the question of tympanic drainage in the course of observation on patients having permanent perforations of the membrana tympani. The intermittent discharge was catarrhal in character, and dependent upon one of two causes: there was either irritation or infection from the auditory canal, with increase of fluid to be drained off, or acute congestion of the Eustachian tube, with consequent obstruction to tympanic drainage. With this conception of the important function of the tube in mind, one could not escape the conclusion that it should be carefully studied as a factor in all catarrhal and purulent conditions of the middle ear and the cells accessory thereto, in which drainage was diverted externally. While the majority of the fistulæ at the site of the mastoid operation were due to an incomplete operation, there were cases in which a perfect operation was followed by a persistent mucous or muco-purulent discharge from a small fistulous tract in the depth of the excavation, and in such cases a careful examination of the Eustachian tube should be the first step. Simple inflation by the Politzer method or catheter did not definitely determine the functional capacity of the tube. The use of the bougie was indicated for diagnosis and treatment. The normal mucous secretion of the tympanum and accessory cells left with intact membrane would seek an outlet by the channel of least resistance. The problem was to re-establish the normal function of the tube, and thus encourage natural drainage. If the tube was permanently closed, impervious to forcible inflation and impenetrable by prolonged application of the bougie, then in dealing with these cases of chronic suppuration it became necessary to destroy all the secreting membrane, normal or pyogenic, with cicatrization or epidermization of the tympanum, attic and mastoid cells.

Dr. Max A. Goldstein of St. Louis, Mo., spoke of two cases where there was a distinct connection between the mastoid fistula and the Eustachian tube, so that by catheterization of the tube, and blowing air or vapor through the catheter, mucus from the Eustachian tube could be ejected through the mastoid fistula.

CARCINOMA OF THE LARYNX.

Dr. S. E. Solly, of Colorado Springs, Col., reported a case of carcinoma of the larynx in a woman, forty-three years old, who came under his observation on Sept. 10, 1904. Two years before that date she had first complained of hoarseness, which gradually became more severe, until her voice was completely lost. Three months ago she had begun to suffer from gradually increasing dyspnea. Inspection of the larynx showed a nodular tumor growing from the anterior wall, and involving about two thirds of its circumference. The upper surface of the growth was pushing up the false cords, so that they were tense and convex, but it did not extend above them. A section of the growth was removed with the curette, and proved to be carcinoma. The dyspnea finally became so severe that a tracheotomy was done. Subsequently Dr. W. W. Keen, of Philadelphia, did a total laryngectomy. About a month later, some enlargement was observed over the right lobe of the thyroid. The patient refused further operation, and the x-ray treatment was given three times weekly. This failed to arrest the slow increase of the swelling, and she again began to suffer from dyspnea. She died about two months after the operation, the direct cause of her death being obscure, even after a thorough post-mortem investigation. One theory advanced was that the direct cause of death was the lack of parathyroid secretion, one of the parathyroids having been removed at the operation, while the remaining three were involved in the recurrent carcinoma.

Dr. Chevalier Jackson of Pittsburg, Pa., said that Professor Keen's technique for total laryngectomy was well known, and could not be much improved, excepting in regard to the Trendelenburg anesthetizing tube, which he would probably eventually abandon.

Dr. Keen had abandoned preliminary tracheotomy, and Dr. Jackson said he thought it was entirely unnecessary to keep these patients breathing through a tracheotomy canula for a week prior to the operation. The tracheotomy, if one was necessary, could be done at the time of the operation.

Dr. H. W. Loeb of St. Louis, Mo., briefly referred to five cases of laryngectomy that had come under his observation.

Dr. E. Fletcher Ingals of Chicago called attention to the rule that laryngectomy should not be done in extrinsic cases; that was, when the disease had extended outward beyond the walls of the larynx. In intrinsic cases the results were often very favorable.

AN UNUSUAL CASE OF LARYNGEAL SYPHILIS, REQUIRING TRACHEOTOMY.

Dr. Clement F. Theisen of Albany reported this case. He stated that intubation was particularly useful in those cases in which the stenosis was not extreme, and when it was caused by a thickening and infiltration of the cords and ventricular bands, thus narrowing the glottis. In some such cases, intubation might be carefully done without, perhaps, a preliminary tracheotomy. When the stenosis was extreme, or when membranous adhesions existed between the cords, leaving only a very small opening, a tracheotomy should precede attempts to dilate the stricture from above. It was in such cases that a sudden edema might be fatal before an intubation tube could be properly adjusted. Tracheotomy followed by laryngo-fissure offered the best chances of a permanent cure when there was much cicatricial tissue, occluding the glottis by uniting the cords.

A CASE OF INFECTIVE THROMBOSIS OF THE SIGMOID AND LATERAL SINUSES AFTER ACUTE MASTOIDITIS: DEATH FROM MENINGITIS: AUTOPSY REPORT.

Dr. Arnold Knapp of New York reported this case.

KILLIAN'S INSPECTION OF THE TRACHEA AND ESOPHAGUS.

Dr. H. P. Mosher of Boston demonstrated this on the dead subject, and showed a number of new instruments.

MENINGITIS: ITS SYMPTOMATOLOGY, DIAGNOSIS AND TREATMENT, WITH REPORT OF A CASE.

BY DR. S. MacCUEN SMITH OF PHILADELPHIA, PA.

The writer stated that, clinically, we distinguished between epidemic, suppurative, tubercular and serious meningitis. Meningitis from aural disease differed from that due to other causes chiefly in that the symptoms were more severe, and might be relieved by operation. Pachymeningitis externa purulenta was the most common variety. It occurred twice as frequently with chronic disease of the tympanumas it did with the acute form. In this variety of meningitis a large proportion of the cases were insidious, and without symptoms, aside from those of the ear, and were not

discovered until after operation. On the other hand, the disease might begin with a chill and fever. Localizing symptoms were rare. Extension to the meninges might take place in one of three ways: (1) Through carious openings into the skull; (2) through the natural communications, namely, the cochlea and semicircular canals; and, (3) the infection might travel along the blood vessels and connective tissue. The cerebrum was affected when extension occurred through the roof of the tympanum; the cerebellum when it travelled through the inner wall of the labyrinth. The most common mode of extension was either through the inner wall of the mastoid, or through the roof of the antrum or tympanum. Loptomeningitis often occurred with sinus phlebitis, brain abscess, or pachymeningitis, but it was usually complicated only by encephalitis. Meningitis manifested itself in a protean manner. Occasionally, the symptoms were so typical that it was impossible to mistake the affection; at other times they developed in such a latent form that only with the greatest difficulty could a tentative diagnosis be made. The general symptoms which might precede or accompany the focal symptoms were headache, fever, vomiting, slow pulse, respiratory disturbances, jactication, epileptiform convulsions, general hyperesthesia, delirium, involuntary discharge of urine and feces, and phenomena which were almost focal, such as tetany, grinding of the teeth, rigidity of the extremities, and retraction of the muscles of the neck. Headache was the most constant symptom. The focal symptoms related to paralysis of the cerebral nerves, and the symptoms naturally varied according to the principal situation of the meningitic inflammation. The convex portion of the brain was generally affected by suppurative disease, while basilar meningitis was more likely to be of a tubercular nature. As to treatment, apart from employing general methods, such as the use of rest and the application of cold, very little could be accomplished. If there was reason to suspect disease of the ear, surgical interference was naturally indicated. A recent addition to our therapeutic resources was the operation of lumbar puncture. According to Quincke, the inventor of the method, the operation was indicated in the following conditions: 1. In cerebral pressure, with threatening symptoms, where it was desirable to relieve the pressure. 2. In moderate, long-continued pressure. 3. In conditions in which increased pressure was assumed or suspected. 4. In cases in which it was desirable to examine the cerebro-spinal fluid, independent of the cerebral pressure, and thus obtain an opinion as to the nature of the meningitis. 5. In cases in which the fluid was to be examined for diagnostic purposes (blood, toxins, agglutinius, etc.). 6. For the purpose of injecting fluids into the spinal canal as therapeutic agents.

(2) SYMPTOMATOLOGY, DIAGNOSIS AND TREATMENT OF ENCEPHALITIS AND BRAIN ABSCESS:

BY DR. FREDERICK L. JACK OF BOSTON, MASS.

The speaker said that prior to the appearance of Macewen's treatise on "Pyogenic Infective Diseases of the Brain and Spinal Cord" the subject of suppurative infection of the meninges and brain resulting from disease of the middle ear had not received the systematic attention it deserved, though many cases had been reported, and the subject of brain abscess had by no means been neglected in the literature. This was not surprising, in view of the universally hopeless prognosis of these conditions, both with and without operation. The term encephalitis seemed to have several distinct meanings. In the first place, there was the so-called polio-encephalitis, superior and inferior, in which the cranial nerve nuclei of the pons and medulla, respectively, were destroyed either suddenly (acute polio-encephalitis), or gradually (sub-acute and chronic polio-encephalitis). In the second place, there was the acute exudative encephalitis (hemorrhagic encephalitis), described by Dana as following influenza, cerebro-spinal meningitis, typhoid fever and other infectious diseases. This apparently never resulted in suppuration. Thirdly, and of special interest to otologists, came the acute suppurative encephalitis, a term synonymous with cerebral abscess. This form of encephalitis was the result of extension from the ear cavities of pyogenic micro-organisms, either directly, or along the blood vessels, and, together with meningitis, which was the diffuse result of a similar infection, it furnished the principal cause of a fatal outcome in the cases with which the otologist had to deal. According to Dana, brain abscess occurred oftenest between the ages of ten and thirty, and this, Dr. Jack said, corresponded with his experience. He had tabulated, according to the age of onset, forty-three cases occurring at the Massachusetts Charitable Eye & Ear Infirmary, the Boston City Hospital and the Massachusetts General Hospital, and found that thirty-two cases occurred between the ages of ten and thirty, and eleven between thirty and sixty. The abscess caused by ear suppuration was almost invariably situated in the tempero-sphenoidal lobe, from one quarter to an inch within the substance of the brain, and directly over the roof of the middle ear. Sometimes it was located in the cerebellum from peri-sinusitus, and rarely there was one in both regions. Of the forty-three cases tabulated by the writer, all were operated on and there were seven complete recoveries.

(To be continued.)

Recent Literature.

Serums, Vaccines, and Toxins in Treatment and Diagnosis. By Wm. Cecil Bosanquet, M.A., M.D., Oxon., F.R.C.P., London, Physician to Outpatients, Victoria Hospital for Children; Assistant Physician to Charing Cross Hospital. Chicago: W. T. Keener & Co., London: Cassell & Company, Limited. 1904.

In the preparation of this volume the gifted author has skillfully performed "the duties of a pilot amid the shifting and ill-charted shoals of recent bacteriological speculation and research." The book will be found invaluable to students of serum-diagnosis and serum therapy. Here is collected a great mass of facts on the subject of immunity which were widely scattered through the medical journals. It contains a good description of the various tuberculins and a clear and fair statement of their diagnostic and therapeutic value. Among other excellent chapters, the one on diphtheria and its antitoxin might be cited.

There are many references to the original authorities. It is a pleasure to read a text-book on pathology by an English writer who has not confined his literary study to the publications of his fellow countrymen. The book is of handy size, well printed, and attractively bound.

Surface Anatomy. By T. Gillman Moorhead, M.D. (Univ. Dub.), M.R.C.P.I., Physician Royal City of Dublin Hospital; Late Chief Demonstrator of Anatomy and Joint-Lecturer in Applied Anatomy, T.C.D.; Lecturer in Medicine Royal Services School, T.C.D. Illustrated. New York: William Wood & Co. 1905.

This volume of 150 pages, including an index, is essentially a reproduction of the course of lectures given by the author when demonstrator of anatomy in Trinity College, Dublin. The aim is merely to draw attention to the knowledge to be gained of internal structures through acquaintance with external markings. The book is adequately illustrated, but it is a matter of regret, particularly in attempting to demonstrate muscles, that a more muscular subject was not obtained for photographic reproduction. Such a book is unquestionably useful.

Hollis' Epitome of Medical Diagnosis. A manual for students and physicians. By Austin W. Hollis, M.D., Attending Physician to St. Luke's Hospital, to the New York Dispensary, etc. Illustrated. Philadelphia and New York: Lea Brothers & Co. 1905.

This is another small book on medical diagnosis, or, as a glance at the text indicates, more properly speaking, a condensed manual of disease. As is almost inevitably the case in such books, we note a particularly insufficient treatment of the diagnosis of diseases of the nervous system. A statement of the symptoms with a description of the course of a disease, and general statements of its differential diagnosis from others has again and again been proven insufficient to lead the student to knowledge in this somewhat involved subject.

Acute Contagious Diseases. By William M. Welch, M.D., Diagnostician to the Bureau of Health and Consulting Physician to the Philadelphia Municipal Hospital for Contagious and Infectious Diseases; for thirty-three years Physician-in-Charge of the Municipal Hospital; Fellow of the College of Physicians of Philadelphia; and Jay F. Schamberg, A.B., M.D., Professor of Dermatology and of Infectious Eruptive Diseases, Philadelphia Polyclinic and College for Graduates in Medicine; Assistant Diagnostician to the Bureau of Health and Consulting Physician to the Municipal Hospital for Contagious and Infectious Diseases; Fellow of the College of Physicians of Philadelphia; Member of the American Dermatological Association. Philadelphia and New York: Lea Brothers & Co. 1905.

This is an octavo volume of 765 pages, illustrated with 109 engravings and 61 full-page plates. It treats of vaccinia, variola, varicella, scarlet fever, measles, rubella, typhus fever and diphtheria. Each of the subjects is treated in a masterly way by men who have had unusual clinical opportunities. There is a vast amount of statistical matter which is of very great importance as bearing on epidemics of these diseases. The illustrations, particularly those in the chapters on smallpox, are very valuable. The serial photographs of the eruption of smallpox from the third to the sixteenth day of the disease are something entirely new in medical literature and convey a remarkably good idea of the course of the disease. The history of vaccination is extremely valuable and should be an unanswerable argument to the anti-vaccinationist.

The chapters on scarlet fever show an immense amount of labor in collecting very valuable statistics. The chapters on diphtheria should be read by every physician who has the well-being of his patients at heart. The chapters on measles contain a great deal of information which should be of interest to the general practitioner. If the sections on diagnosis are carefully read and digested there ought to be fewer mistakes in the diagnosis of the acute infectious diseases.

In short, without taking up the different subjects too much in detail we are of the opinion that no medical work has been published, thus far, which is of so much value to the physician who treats the acute infectious and contagious diseases. No physician can afford to be without this work. The typography is excellent and the illustrations are remarkably well executed. J. H. McC.

Operative Surgery. By Joseph D. Bryant, M.D., Professor of the Principles and Practice of Surgery, Operative and Clinical Surgery, University and Bellevue Hospital Medical College, Visiting Surgeon to Bellevue and St. Vincent's Hospitals; former President of the New York Academy of Medicine, and of the New York State Medical Association; President of the New York State Medical Society, etc. Volume I. General Principles, Anesthetics, Antiseptics, Control of Hemorrhage and Shock. Treatment of Operation-Wounds, Ligature of Arteries, Operations on Veins, Capillaries, Nervous System, Tendons, Ligaments, Fasciæ, Muscles, Bursæ, and Bones. Amputations, Deformities. Plastic Surgery. Operations on Mouth, Pharynx, Nose, Esophagus and Neck. This volume contains 898 illustrations, 61 of which are colored. Volume II. — Operations on the Viscera Connected with the Peritoneum, the Scrotum and Penis, and Miscellaneous Operations, including those for some Deformities of the External Ear. This volume contains 895 illustrations, 39 of which are colored. Fourth edition, printed from new plates. Entirely revised and largely rewritten. New York and London: D. Appleton & Co. 1905.

The fourth edition of this book is now before us. A great deal of it has been rewritten and it has been entirely revised. Two hundred and thirty new illustrations have been added, and we regret that a goodly number of the old illustrations have not been removed, for some of them are distinctly antiquated. The work is in two volumes and an enlargement to three volumes is imminent. Dr. Bryant's "Operative Surgery" is, all things considered, the best American work on operative surgery.

THE BOSTON

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A FURTHER REPORT ON SLEEPING SICKNESS.

THE fifth report on sleeping sickness, under the charge of the commission sent out by the Royal Society, has recently been published and is commented on in a recent number of the *British Medical Journal*. The general result of this further investigation is corroborative of what has gone before in that it shows that the tsetse fly is the host of the trypanosome which must be regarded either as the cause or as a necessary factor in the production of the disease. The authors of the report, Captain Grieg and Lieutenant Gray, are inclined to consider the trypanosome as the sole cause, but it is possible that a diplostreptococcus is concerned in the production of some of the symptoms. The general conclusions are summed up in the following statements:

1. That the disease is at first a specific polyadenitis caused by the trypanosoma gambiense.
2. That, in addition to enlargement of lymphatic glands, the blood shows a constant lymphocytosis at all stages of the disease.
3. That sleeping sickness is the last stage of this disease and is invariably fatal. It consists essentially in a polyadenitis *plus* signs and symptoms due to changes in the nervous system; the onset of these signs and symptoms synchronizes with the entrance of the trypanosoma gambiense into the lymph spaces of the nervous system; this is accompanied by a rise of the mononuclear elements in the cerebrospinal fluid.
4. That the resistance of both men and monkeys to the trypanosoma gambiense, as judged by the early stage, varies greatly, and probably a certain proportion, not yet exactly determined, acquire sufficient immunity to arrest the development of the disease at that stage.
5. That the action of arsenic in vita on the trypanosoma gambiense is partial. It destroys a number of the trypanosomes, and probably these act as immunizing agents. Its administration in the stage of polyadenitis tends to help the natural resistance to combat the disease.
6. That bacterial invasion, chiefly coccal, occurs in some cases, but only in the very last days of the sleeping sickness stage, and therefore cannot determine the onset of this phase of the malady.
7. That, in addition to the trypanosoma gambiense, other varieties of trypanosoma occur in Uganda which are pathogenic to animals.
8. That those trypanosomes differ entirely from trypanosoma gambiense in morphology and animal reactions.
9. That one of these trypanosomes is probably identical with trypanosoma bruceii. The other two differ from it and are, provisionally, unclassed.
10. That those varieties of trypanosomes are conveyed from the sick to the healthy by the Uganda tsetse fly (*Glossina palpalis*), and not by other biting flies (*Stomoxys*).

The work of which the foregoing statement is a summary, although as yet incomplete in certain respects, has been carried out with much care and experimentation. Our contemporary takes exceptions to the designation of the onset of the disease as a specific adenitis on the ground that the alterations in the glands represent but one phase of the underlying condition. The possibility of a secondary infection capable of producing definite symptoms should also be considered, although Captain Grieg and Lieutenant Gray are of the opinion that such an infection, if it occurs, takes place only in the last days of life. This view does not correspond with that of a previous commission sent out from Portugal, which found infective bacteria a very considerable time before death took place. Investigation along this line appears to be called for, since the etiology of a disease of this character cannot be regarded as established until all other possible causes have been eliminated. This appears not yet to have been accomplished completely in the excellent work of this commission. From a practical standpoint it appears that patients die either by the usual method of passing into a stage of sleep or, less frequently, through the inroads of recognized intercurrent disease, such as pneumonia. The question of immunity from the infection remains to be worked out in detail. Adequate means to combat the spread of the disease have not yet been discovered, and it is apparently spreading in various directions from Uganda, where it is practically endemic. In fact, its extension toward the north is likely to prove a menace to Egypt in its

southern regions unless some means are soon found to prevent its further encroachment.

Sleeping sickness, about which much has been written of late, is one of the tropical diseases which no doubt will soon be mastered. It is hard for those of us who live quietly in cities farther north to realize how important and insistent the problem of tropical disease is and how great an effect it is likely to have in the immediate future upon the possibilities of trade with the various tropical countries. It is, however, hardly to be questioned that, with the knowledge already gained of the acute infections, together with the development of schools devoted to this work, many of the menacing affections of the tropics will shortly be completely understood and rendered innocuous.

THE PROPOSED LEPER HOSPITAL FOR MASSACHUSETTS.

A PROTEST against the proposed leper hospital on one of the islands off the southern coast of Massachusetts, under the caption "No Use for Lepers on Buzzard's Bay," appeared not long ago in one of the daily papers. Popular prejudice, as usual, must voice its opposition to anything new in plans for public health, but an unusual amount of hostility goes into this protest. To the western mind, on account of the rarity of leprosy among us, and possibly because of biblical associations, and under the influence of those half-acknowledged superstitions which lie dormant in most New England minds, this disease stands for utter degradation, and its victims are loathsome to a degree. However clear it may be that leprosy must receive State care, no community will welcome lepers as neighbors. The story of Father Damien may be known and appreciated, but very few people have any inclination to follow his example.

As it is well known that real estate is affected in value quite as much by sentiment as by fact, the fears of property owners in this case are, perhaps, well founded. If the hospital is built on Penikese property, values on the mainland may suffer for a time, but, after a little, facts will begin to count. To begin with, the lepers are here and must be cared for somewhere. It was proposed that provision should be made for their care either at the State hospital at Tewksbury, or on Gallops Island, thus avoiding the expense of a separate establishment. This idea was abandoned, however, although several authorities assured the Board that it was perfectly possible to avoid all danger of contagion even in existing institutions by proper isolation.

The slight probability of contagion is strikingly illustrated by the case of the leper who lived in the open ward in Neumann's clinic in Vienna, from whose presence, although for months he assisted in the ordinary ward work, even to the serving of meals, no ill results followed. Even in the East, where conditions are so favorable to the development of leprosy, intimate contact is found to be necessary. Most students agree that it is contagious only through inoculation, in which respect it resembles phthisis. By attention to hygiene and by segregation of cases, leprosy has been stamped out in many localities. It has been asserted that thirty feet separation insures safety against even such a virulent disease as diphtheria, so that miles of ocean will surely isolate our lepers sufficiently.

The problem before the State was to find a spot far enough removed to render contagion impossible, to give complete isolation, and to allow some healthful freedom to the unfortunate victims themselves. The island chosen by the Board certainly answers these requirements, and we predict that if Buzzard's Bay can conquer its present prejudices, time only will be needed to make the leper colony on Penikese nothing but an improvement for the State, and no menace to local property.

MEDICAL NOTES.

LONDON SCHOOL OF TROPICAL MEDICINE. — It is announced that the University of London has added the School of Tropical Medicine to its departments. This school was established under the influence of Mr. Joseph Chamberlain when he was Secretary of State for the Colonies.

YELLOW FEVER. — It is reported that a number of cases of yellow fever have appeared in New Orleans, and that Alabama, Texas and Mississippi have declared a quarantine against the city. The cases are restricted to a small area of the city, and at first were confined to the Italian quarter.

HONORS TO AMERICAN PHYSICIANS. — Dr. William S. Halsted, professor of surgery at the Johns Hopkins University, and Dr. William W. Keen of Philadelphia have received the honorary degree of LL.D. from Edinburgh University, the occasion being the quarter centenary of the Royal College of Surgeons.

A MARYLAND MEDICAL LIBRARY REPORT. — The library of the Faculty of Physics of the University of Maryland issues in its annual report, which has just appeared, statements indicative of prosperity and usefulness. Seven hundred volumes, three hundred pamphlets and twelve pictures were added during the year. The privileges of this library, including borrowing, are open to any Baltimore physician on paying $2 per annum. The library belongs to the Department of History and Medicine, and is under the charge of the professor of that branch, Dr. Eugene F. Cordell.

THE ST. LOUIS SKIN AND CANCER HOSPITAL. — On July 1 the St. Louis Skin and Cancer Hospital opened its doors for the reception of patients. This institution consists of a completely equipped hospital of forty beds, and an out-patient service. As the title indicates, only skin and cancerous diseases will be treated. The institution is founded upon the research idea for cancer and allied types of malignant diseases. A pathologist, who will devote all of his time to the needs of the hospital, has been appointed, and he will conduct such scientific investigations as the opportunities of the hospital and clinic will permit. A training school for nurses, partaking of the character of a post-graduate school, has been established in connection with the hospital. Daily clinics for out-patients will be held. The institution is to be free of charge to all patients. Inoperable and incurable cancer cases, as well as the operable ones, will be admitted to the hospital. The society hopes, in the near future, to have a home, situated somewhere in the suburbs of the city, for the former cases.

The following medical staff has been appointed: Dr. G. Baumgarten, Dr. N. B. Carson, Dr. J. R. Clemens, Dr. M. F. Engman, Dr. A. E. Ewing, Dr. E. C. Burnett, Dr. W. E. Fischel, Dr. Frank R. Fry, Dr. George Gellhorn, Dr. John Green, Dr. John B. Keber, Dr. F. J. Lutz, Dr. Guthrie McConnell, Dr. H. G. Mudd, Dr. Greenfield Sluder, Dr. J. B. Shapleigh, Dr. Ellsworth Smith, Jr., Dr. Justin Steer, Dr. Fred Taussig.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, July 26, 1905, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 10, scarlatina 4, typhoid fever 8, measles 15, tuberculosis 35, smallpox 0.

The death-rate of the reported deaths for the week ending July 26, 1905, was 22.58.

BOSTON MORTALITY STATISTICS. — The total number of deaths reported to the Board of Health for the week ending Saturday, July 22, 1905, was 239, against 195 the corresponding week of last year, showing an increase of 44 deaths, and making the death-rate for the week 20.29. Of this number 130 were males and 109 were females; 232 were white and 7 colored; 153 were born in the United States, 84 in foreign countries, and 2 unknown; 47 were of American parentage, 166 of foreign parentage, and 26 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 25 cases and 2 deaths; scarlatina, 11 cases and 1 death; typhoid fever, 11 cases and 1 death; measles, 16 cases and 1 death; tuberculosis, 51 cases and 20 deaths; smallpox, no cases and no deaths. The deaths from pneumonia were 9, whooping cough 0, heart disease 20, bronchitis 4, and marasmus 4. There were 25 deaths from violent causes. The number of children who died under one year was 70; the number under five years, 91. The number of persons who died over sixty years of age was 47. The deaths in public institutions were 74.

There was one case reported from cerebro-spinal meningitis during the week, no deaths.

NEW YORK.

PRESIDENT OF NATIONAL CONFERENCE OF CHARITIES AND CORRECTION. — Edward T. Devine, Ph.D., who is professor of social economy in Columbia University, and also general secretary of the New York Charity Organization Society, was elected president of the National Conference of Charities and Correction at its recent annual meeting, held at Portland, Ore.

BEQUESTS TO HOSPITALS. — By the will of the late Mrs. Margaret A. Jones, her large estate, with the exception of legacies amounting to $135,000, is left in equal portions to St. Luke's Hospital, the New York Post-Graduate Hospital, and the Peabody Home. The bequest to each of these institutions is in the form of a specially named memorial fund. The amount of the estate has not been made public.

APPOINTMENT OF DR. MELVIN P. BURNHAM. — The Board of Managers of the New York State Hospital for the Treatment of Incipient Tuberculosis have appointed Dr. Melvin Page Burnham acting superintendent, to succeed Dr. J. H. Pryor, who recently resigned. Dr. Burnham, who was graduated from the Harvard Medical School in 1900, has been resident physician for

the last three years at the Seton Hospital for Consumptives at Spuyten Duyvil, in the borough of the Bronx.

Esopus Watershed. — As a result of a personal examination of the Esopus watershed in Ulster County recently made by the members of the City Water Commission, the mayor has been able to announce that before January 1 contracts for the new reservoirs in that section and for the new acqueduct will be let, and the work of construction of the addition to the city's water supply actually begun. The estimated cost of the undertaking is $110,000,000, and it is thought that it will require fully ten years to complete. At a conference with the mayor on July 18 it was decided that the recommendations and plans of the local commission should be laid before the State Water Commission, for approval, not later than September 1. At the present time there is a considerable shortage in the water supply of the borough of Brooklyn, owing to the continued drought on Long Island, and it is feared that unless the situation is relieved before long the health of the community may be materially affected.

Obituary.

EDWARD STICKNEY WOOD, M.D.

"Integer vitæ, scelerisque purus."

To what medical man of our day could those words more fitly apply? Of sturdy New England stock, his ancestors, the descendants of William Wood, who came from the old country in 1638, settled in northern Massachusetts and southern New Hampshire, where they lived the life agricultural, until of the fourth generation, weary of the drudgery of the farm, Alfred Wood, removed to Cambridge, where he founded the house of Wood & Hall, destined to become the leading firm of grocers in that city. To him and his wife, Laura Stickney Wood, were born two sons, the younger, Edward Stickney, on April 28, 1846. It would therefore seem that there was little in the way of heredity to suggest the successful professional and scientific career of the subject of this notice; indeed, it is more likely that his attention was directed to a university education by reason of environment, life in a university town and the example of schoolmates than from a strong desire for a professional career. Like the life of most boys, Wood's life was uneventful. In comparatively early years he manifested his liking for water sports, boating and fishing, and he was the envy of his mates because of his possession of a racing boat, and thus he acquired the sobriquet "Shell" Wood, which stuck to him through his college life. He passed the various grades of Cambridge schools, graduating from the High and matriculating at Harvard in 1863.

No indication of his future success was evidenced during the first two years of his course. He was hampered by his dislike of the "classics" and it was not until in his junior year, when he was able to lay aside Greek and Latin, in those days "required" studies during freshman and sophomore years, that he showed by his devotion to the study of mathematics and chemistry, and the high rank attained therein, the ability which was in him. The same popularity which has been his all through life was his while in college. He was one of the first eight elected to the Pi Eta society, of which he was a very active member, and he was chosen the second president of the graduates' association of that society. His day in college was before the strenuous sports of modern times. Baseball was just coming in and the only event of importance was the annual boat race between Harvard and Yale at Worcester. It is not recorded that Wood was ever a candidate for the University crew, but he was seen very much on the river and was a member of his class crew and his class nine.

At the close of the summer vacation, after he was graduated, in 1867, he entered the Harvard Medical School and completed his studies there in 1870, although he did not at that time receive his degree in medicine. He served as house officer in the Marine Hospital in Chelsea, together with Dr. George M. Garland, and after his service there he was appointed surgical house pupil to the Massachusetts General Hospital. His service at that institution was for a year, and in company with Dr. James R. Chadwick, Dr. James T. Boutelle, now of Hampton, Va., and the late Dr. Joseph P. Oliver, he had the advantages of the instruction of those great surgeons, Henry J. Bigelow, George H. Gay and Richard M. Hodges. At that time his life work was apparently to be surgery, and although a septic wound received in discharge of duty resulted in a permanent impairment of one finger, the disability, while annoying, would not have proved a permanent obstacle to his success in that specialty. Fate, however, ordered things differently. At that time Dr. James C. White, the successor of Professor Bacon, occupied the chair of chemistry He was looking forward to the practice of the specialty of dermatology and desired an assistant. Wood of all others, because of his skill in the science and his liking for the work, was clearly the most desirable man for his place. Therefore, after some time spent in the study of this branch in Europe under the best teachers, he was appointed assistant professor and did his first important service in conducting the examinations of candidates for the degree of doctor of medicine in March, 1872. In 1876 he succeeded to the full professorship of chemistry, which chair he held up to the time of his death.

It was at about the time of his joining the educational staff of the school that Dr. Wood married Miss Irene E. Hills, and continued to reside in Cambridge on Chauncey Street, next to the home of his parents. His marriage was on Dec. 26, 1872, and of this union was born

his only child, Grace, now the wife of Dr. Frederick M. Briggs, who occupies the chair of surgery at the Tufts Medical School. He continued to reside in Cambridge, after the loss of his wife, until the marriage of his daughter. It was during the early part of his life in Cambridge, when he was dividing his time between his laboratory work there and at the Harvard School, that at the suggestion of one of his pupils, a man who of late has been very much in the public eye, Gen. Leonard Wood, who, however, was not a relative, Professor Wood established a summer home at Pocasset. He first bought a house, and afterward built a charming home, to which later, in 1883, he brought a second mistress of the place, Elizabeth (born Richardson) who, with his daughter, Grace, alone survive of his immediate family. Here at Pocasset he passed the summer months, with occasional trips to Boston, either in work, or in the sport of blue-fishing or yachting and returned to his work in the fall with renewed youth and vigor. Wood was essentially a "home body." His domestic life was extremely happy and he begrudged the time during which professional work compelled him to absent himself from his own fireside. Even the time spent abroad was not devoted to the usual pursuits of the "globe trotter" but to study. Travel was only incidental, and when he was called to the far West, in 1877, to give evidence in a case of alleged murder he counted the days until he could get back to his home in Cambridge. To be sure he was a member of many clubs. His name was on the rolls of the University, the Algonquin, the Athletic, the St. Botolph, and the Orpheus, but, aside from the last mentioned, he used the clubs only for the semi-occasional entertainment of family or friends, or social intercourse with members of his own profession. He was never in the ordinary sense of the term a "club man." Such from the earliest years to the day of his untimely passing — untimely because, dying at an age of less than sixty years, the profession and the world had a right to expect many more years of useful service — are the simple annals of his life.

Dr. Wood occupied two quite distinct positions in the public eye; that of professor in the Medical School and member of the faculty, and that of expert medical witness in the courts of this and other commonwealths. As a teacher his success was undoubted. He had the rare faculty of making a subject, dry by comparison with others, such as surgery, which is capable of more brilliant demonstration, attractive by his method of teaching, resembling in this respect his warm personal friend, the late Oliver Wendell Holmes. He won not only the respect of his students but also their affection, and none will regret his death more than those who have had the rare privilege of having received his instruction. He was most just to all his pupils, and, while he insisted on every man's having a sufficient knowledge of the subject before he could receive his degree, he at the same time exercised a wise and beneficent judgment of the work of each individual man, and he must have been a dull person indeed who, after listening to Professor Wood's instruction, was unable to meet the requirement of the examination paper. His success as a teacher, as well as an expert, was in large measure due to a characteristic manifest even in his earliest years as a student himself. It would probably be extravagant to say that Dr. Wood was a genius, but he had that which counts for more than genius in the long run, a tremendous capacity for work and an infinite power of application, an unremitting insistence on taking pains. He never attacked a subject which he did not master thoroughly. What he knew he *knew*. This same thing he endeavored to instil into the minds of his pupils, and there are many now who have achieved success in their profession because of having followed his example. As a member of the faculty he was invaluable, and the President of the University held him in the highest regard and relied largely on his advice. He always had the warmest interest in the welfare of the school and was a valuable friend and adviser to its dean. Enthusiastic, but still conservative, his counsel will be sadly missed in the future.

As a medical expert in his own especial line he was *facile princeps*. In the history of forensic medicine of New England there has probably been no man who was his equal. Almost from the start he compelled the respect and admiration of both Bench and Bar. Even the accused and their counsel had to admit that however damaging to their cause his evidence was he had "set down nought in malice." His absolute impartiality, his clearness of statement, his wonderful ability to make, as far as possible, intelligible even to the mind of the layman on the jury matters of science, his unruffled good nature under severe cross-examination, and his unquestioned tenacity of his *propositum* won him universal regard and the popular judgment of his forensic work was expressed in the highest terms. His experience in this line was very great. There has been hardly a case of trial for a capital crime where his knowledge of chemistry, and especially his skill in the demonstration of blood stains of various kinds, in which his services have not been required. To recount his cases would be almost like reciting the "catalogue of ships," and the last case of importance in this State was one where his evidence was of the utmost importance and was given under conditions of much physical suffering. In the handling of these important cases his discretion was admirable. He considered that his whole duty was to the Commonwealth and its officers and always declined to give out any information to the garners of the press, inasmuch as such communication would not only "corrupt good manners" but might imperil the case of the Government. He was discretion itself. In short, his success as a medical jurist was something phenomenal.

It might be thought that in the midst of such

continuous work Professor Wood would have little or no time for aught else. Such was not the case. His industry was untiring. Not only did he find time for fugitive papers for medical journals, addresses to medical bodies, and participations in the discussions of various societies, but also for more important and enduring work, now held for the future by the "art preservative." He translated the work of Neubauer and Vogel on urinary analysis, and with Dr. Robert Amory revised that portion of the work of Wharton and Stillè on medical jurisprudence so far as his special line was concerned. In public work he also shared the tasks of others. In 1874 he was a member of the commission which investigated the sanitary condition of the waters of the Sudbury, Shawsheen, Mystic and Charles rivers. He also prepared an important paper in 1894 for the State Board of Health relative to arsenic in its relation to domestic life. He was a fellow of the American Academy of Arts and Sciences, member of the American Public Health Association, American Pharmaceutical Association, Massachusetts Medico-Legal Society, Boston Society for Medical Improvement, and Massachusetts Medical Society. He was also a member of the committee for the revision of the Pharmacopœia in 1880, and chemist to the Massachusetts General Hospital.

All these are things by which for a little he will be remembered by those who so soon forget us when we are gone. To those who knew him best, who had the privilege of his close acquaintance, if not intimate friendship, the thing which will hold him longest and best will be his charming personality. Whose greeting so cordial, and so gracious? Dr. Wood was essentially a democrat in the best sense of the word. It was this that made him so universally popular, in no cheap sense but in the sense that the man honored with his friendship, whatever his walk in life, if he rang true, was sure of kindly recognition. He seemed to be fully in touch with Burns when he wrote "A man's a man for a' that." While in Europe he acquired a liking for many of the customs of the German fatherland, which induced him after his return to become a member of the Orpheus Verein, of which he was a most respected and beloved member. Here he was always at home, and it was characteristic of the man that he was as equally at ease, equally happy, "rubbing a salamander" at the Orpheus as at the council table of Harvard. With artist and artizan, mechanic or musician, professor or publicist, Dr. Wood was always on the same plane, equally happy, equally admired and admiring. It is to be doubted if he had an enemy in the world, and although such a condition generally predicates a nonentity it may be safely affirmed that if he had an enemy that man's enmity was a compliment.

He was always a generous man, always helpful to those in trouble, whether intimate friends or those less well known, whose misfortunes appealed to him. In his estimates of men he was accurate, and rarely was he misled by the importunities of the undeserving. He was thoroughly just. Especially was this noticeable when he was engaged in forensic work. If he formed an opinion as to the guilt or innocence of the accused he never gave it outward expression, and by mere perusal of his testimony no person could form an accurate idea as to the side for which he was employed. He was freer to forgive than to censure and through all his life no man can say that he has not been happier because of the association with the man whom so many are mourning to-day.

In conclusion it may be justly said that while the great majority of people will remember Professor Wood for his scientific attainments and look up with admiration to his high professional standing, there are still many, who, in their heart of hearts, men closer to him in their lives, socially and professionally, will cherish the memory of the *man* as he was to them —always, simply "Ned" Wood. May his memory be ever green and to his ashes peace!

Miscellany.

THE DANYSZ VIRUS FOR FIELD PESTS.

An example of the national character of the work undertaken by the Pasteur Institute in Paris is afforded by the annual report of the British Consul at Bordeaux, just published. In the department of Charentes, which lies to the north of Gironde, the crops have suffered terribly from the inroads made by a small animal described as something between a field mouse and a field rat. These rodents, as a rule, occupy the lower marshy ground, chiefly meadows and pasturage; but the floods following the heavy rains of 1902-03 drove them from their natural habitat on to the higher arable land, where they wrought serious havoc. In spite of various efforts at extermination they throve in their new quarters and multiplied at a terrific rate, their numbers being estimated at from 1,000,000,000 to 1,200,000,000. Nux vomica was the chief medium employed to rid the country of these marauders but it proved unsatisfactory inasmuch as small birds, game, domestic fowls, and animals were freely numbered among its victims. Then the Pasteur Institute came to the rescue with a specially prepared remedy. At first this Danysz virus did not prove very efficacious until experience taught that it must be distributed while fresh and protected, as far as possible, from the action of light. The practice adopted was to prepare the rolled-oat grain used as bait in dimly lighted sheds and to spread it on the fields in the evenings. Under these conditions, it is claimed, says Mr. Vice-Consul Hamilton, that "the mortality induced by it in the field mice, as the result of recent experiments, is as high as 98% within fifteen days, as not only those 'campagnols' which have eaten the bait die within five days but the others are infected by the disease and die in their turn." — *Lancet.*

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JULY 15, 1905.

CITIES.	Population Estimated, 1904.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from					
				Infectious diseases.	Acute lung diseases.	Diphtheria and croup.	Diarrheal Diseases.	Cerebro-spinal fever.
New York . .	3,908,644	1,741	826	41.53	6.83	1.55	27.51	1.84
Chicago . . .	1,990,750	447	156	34.00	5.81	1.56	16.10	.22
Philadelphia	1,407,968	548	243	39.05	5.11	1.27	24.45	.36
St. Louis . .	633,606	—	—	—	—	—	—	—
Baltimore . .	543,239	274	140	43.43	5.11	.73	28.83	—
Cleveland . .	444,251	—	—	—	—	—	—	—
Buffalo . . .	400,645	—	—	—	—	—	—	—
Pittsburg . .	362,403	—	—	—	—	—	—	—
Cincinnati . .	338,377	—	—	—	—	—	—	—
Milwaukee . .	325,950	—	—	—	—	—	—	—
Washington .	300,776	—	—	—	—	—	—	—
Providence .	196,744	73	26	27.40	2.74	—	21.92	—
Boston . . .	617,950	201	60	20.89	8.95	1.49	6.96	.99
Worcester . .	136,925	47	16	21.27	2.12	—	10.63	4.25
Fall River . .	119,349	40	33	47.50	—	—	42.50	—
Lowell . . .	104,402	53	30	35.85	5.66	—	32.07	—
Cambridge . .	100,998	33	15	42.42	—	—	33.33	—
Lynn	73,875	17	6	11.76	—	—	—	—
Lawrence . .	72,848	52	40	69.22	1.92	—	51.92	1.92
Springfield .	72,020	31	11	22.58	—	—	12.90	—
Somerville .	70,413	20	5	35.00	5.00	—	15.00	—
New Bedford	68,863	23	11	52.17	4.35	—	39.13	—
Holyoke . . .	50,538	17	11	47.06	5.88	—	41.18	—
Brockton . .	46,601	12	2	33.33	—	—	—	—
Haverhill . .	39,310	5	2	—	—	—	—	—
Newton . . .	39,061	12	5	50.00	—	—	33.33	—
Salem	37,305	19	10	57.89	—	—	26.31	10.52
Malden . . .	37,188	7	1	28.60	—	—	—	—
Chelsea . . .	36,499	10	3	10.00	—	—	—	—
Fitchburg . .	36,335	13	4	7.70	15.40	—	—	—
Taunton . . .	34,577	11	3	18.18	—	—	18.18	—
Everett . . .	30,369	3	—	—	—	—	—	—
North Adams	29,301	7	1	—	14.30	—	—	—
Gloucester .	26,798	—	—	—	—	—	—	—
Quincy . . .	26,121	4	2	50.00	—	—	25.00	—
Waltham . . .	25,797	4	2	—	—	—	—	—
Brookline . .	23,576	—	—	—	—	—	—	—
Pittsfield . .	22,870	5	1	—	—	—	—	—
Chicopee . .	21,956	17	10	47.05	5.88	—	29.40	—
Medford . .	21,692	4	2	—	—	—	—	—
Northampton	20,314	7	3	—	—	—	—	—
Beverly . . .	15,807	6	3	33.33	—	16.67	—	—
Clinton . . .	15,711	1	0	—	—	—	—	—
Leominster .	15,694	1	—	—	—	—	—	—
Newburyport	14,745	6	1	16.67	—	—	16.67	—
Woburn . . .	14,561	0	—	—	—	—	—	—
Hyde Park . .	14,500	1	1	100.00	—	—	—	100.00
Adams	14,478	—	—	—	—	—	—	—
Attleboro . .	14,315	—	—	—	—	—	—	—
Marlboro . .	13,819	1	0	100.00	—	—	—	—
Melrose . . .	13,809	4	1	—	—	—	—	—
Westfield . .	13,771	3	2	—	—	—	—	—
Milford . . .	13,600	—	—	—	—	—	—	—
Revere . . .	13,609	3	1	—	—	—	—	—
Framingham	13,974	—	—	—	—	—	—	—
Peabody . .	13,406	—	—	—	—	—	—	—
Gardner . . .	12,334	2	2	—	—	—	—	—
Weymouth . .	11,716	1	0	—	—	—	—	—
Southbridge	11,575	3	1	66.67	—	—	33.33	—
Watertown .	11,350	3	2	33.33	—	33.33	—	—
Plymouth . .	11,139	—	—	—	—	—	—	—

Deaths reported, 3,798; under five years of age, 1,702; principal infectious diseases (smallpox, measles, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 1,499; acute lung diseases 219, consumption 322, scarlet fever 10, whooping cough 20, cerebrospinal meningitis 45, smallpox 0, erysipelas 8, puerperal fever 8, measles 41, typhoid fever 31, diarrheal diseases 913, diphtheria and croup 48.

From whooping cough, New York 11, Chicago 3, Philadelphia 3, Baltimore 2, Worcester 1. From scarlet fever, New York 5, Chicago 4, Philadelphia 1. From cerebrospinal meningitis, New York 32, Chicago 1, Philadelphia 2, Providence 2, Boston 2, Worcester 2, Lawrence 1, Salem 2, Hyde Park 1. From erysipelas, New York 1, Philadelphia 4, Baltimore 1, Boston 1, Springfield 8.

In the seventy-six great towns of England and Wales, with an estimated population of 15,609,377, for the week ending July 8, 1905, the death-rate was 11.6. Deaths reported 3,484; acute diseases of the respiratory organs (London) 32, whooping cough 71, diphtheria 23, measles 122, smallpox 0, scarlet fever 27.

The death-rate ranged from 3.9 in Bournemouth to 18.5 in Tynemouth; London 11.2, West Ham 10.3, Brighton 9.8, Southampton 11.3, Plymouth 13.9, Bristol 14.0, Birmingham 10.7, Leicester 8.2, Nottingham 8.7, Birkenhead 12.6, Liverpool 17.4, Wigan 13.9, Bolton 13.8, Manchester 15.3, Salford 14.9, Halifax 11.1, Bradford 13.3, Leeds 9.1, Hull 8.5, Sheffield 13.0, Newcastle-on-Tyne 16.0, Cardiff 6.7, Rhondda 15.4, Merthyr Tydfil 17.7, Wallasey 5.0, Oldham 14.1.

METEOROLOGICAL RECORD.

For the week ending July 15, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

DATE	Barometer.	Thermometer.			Relative humidity.			Direction of wind.		Velocity of wind.		Weather*		Rainfall in inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A.M.	8.00 P.M.	Daily mean.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	
S. . 9	29.95	82	92	72	82	74	78	S W	W	6	10	F.	F.	T
M. 10	30.02	82	93	72	77	78	78	W	W	4	8	C.	F.	T
T. . 11	30.10	70	76	64	71	93	83	K	E	7	6	C.	O.	T
W. 12	30.10	80	91	68	86	70	78	S E	S W	3	13	O.	C.	0
T. . 13	30.08	82	90	74	70	61	66	S W	S W	15	15	C.	C.	T
F. . 14	30.00	80	90	70	74	76	75	W	S W	12	12	C.	O.	.55
S. . 15	30.02	74	82	65	63	51	57	W	N	9	9	C.	C.	.0
☞	30.04		88	60			74							.55

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Means for the week.

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING JULY 22, 1905.

W. C. BRAISTED, surgeon. Detached from special duty in connection with the Russo-Japanese war and ordered to the navy department.

E. R. MARSHALL, C. B. MUNGER, assistant surgeons. Appointed assistant surgeons, with rank of lieutenant (Junior Grade), from July 7, 1905.

J. B. MEARS, F. H. BROOKS, assistant surgeons. Appointed assistant surgeons, with rank of lieutenant (Junior Grade) from July 14, 1905.

RECENT DEATHS.

WILLIAM MOSELEY BASS, M.D., M.M.S.S., of Dedham, died in Dorchester, July 21, 1905, aged ninety-five years.

BOOKS AND PAMPHLETS RECEIVED.

Handbook of Anatomy, being a Complete Compend of Anatomy of the Viscera and Numerous Tables. By James K. Young, M.D. Second edition, revised and enlarged. Illustrated. Philadelphia: F. A. Davis Co. 1905.

Fourth Annual Report of the Metropolitan Water and Sewerage Board. Boston. Jan. 1, 1905.

First Aid in Illness and Injury comprised in a series of chapters on the Human Machine, its Structure, its Implements of Repair, and the Accidents and Emergencies to which it is Liable. By James Evelyn Pilcher, M.D., L.H.D. Ninth edition, revised. Illustrated. New York: Charles Scribner's Sons. 1905.

Our Weal and Woe. By Dr. Wm. Louis Rabe. Reprint.

A Syllabus of Materia Medica. Compiled by Warren Coleman, M.D. Second Edition. New York: William Wood & Co. 1905.

The Pharmacopœia of the United States of America. Eighth Decennial Revision. By authority of the United States Pharmacopœial Convention held at Washington, A. D. 1900. Revised by the Committee of Revision and Published by the Board of Trustees. Official from Sept. 1, 1905. Philadelphia: P. Blakiston's Son & Co.

Some Forensic Problems Concerning Venereal Diseases. By Ferd. C. Valentine, M.D., and Terry M. Townsend, M.D. Reprint.

The Axis of Astigmatism. By J. Herbert Claiborne, M.D. Reprint.

How the General Practitioner should treat Gonorrhea. By Ferd. C. Valentine, M.D., and Terry M. Townsend, M.D. Reprint.

Address.

THE INFLUENCE WHICH THE ACQUISITION OF TROPICAL TERRITORY BY THE UNITED STATES HAS HAD, AND IS LIKELY TO HAVE, ON AMERICAN MEDICINE.*

BY GEORGE BLUMER, M.D., SAN FRANCISCO.

It is a custom in many universities, both in this country and in Europe, to allow each professor leave of absence during every seventh year of service. This custom is doubtless based on the Sabbatical year of the Pentateuchal codes, an institution which demanded that the fields be allowed to lie fallow every seventh year. It is a question whether the Sabbatical year as an institution could not with benefit be introduced into matters medical, and whether we might not profit by resting every seventh year, and devoting our time not to the strenuous throes of medical existence, but to a calm, dispassionate review of the progress of medicine in the preceding septennate, and the factors which have influenced that progress. With this idea in view I have chosen to speak to-day on an aspect of our medical progress which is now in its Sabbatical year.

It is at present almost exactly seven years since, by the terms of treaty following the Spanish War, the United States came into possession of tropical territory in both the eastern and the western hemispheres. It is unnecessary and inappropriate to discuss here the general significance of this territorial acquisition, its bearing on politics, its effect on commerce, its influence on public affairs in general; it is sufficient if we, as the representatives of the medical profession of this country, take stock of the medical questions involved, discuss their significance, and gauge the effect which they exert on American medicine in general. No doubt many of our hyperopic brethren foresaw, seven years ago, some of the effects which our acquisition of Porto Rico and the Philippines was to have on American medicine. There is just as little doubt that some of the results were entirely unlooked for, and have been complete surprises. It might appear at first sight that, from analogy, we should have been able to foretell the influence which increased commerce with our tropical territory, and the return of our soldiers and sailors with tropical diseases, would have on medicine in the United States. Obviously one would look to the experience of European countries, and notably of England, to form a basis for judgment, for these countries have had tropical possessions for generations. It must not be forgotten that the physical conditions here are different from those in Europe, for, while Europe is almost entirely within the temperate zone, portions of this country are semi-tropic, and a few very small areas are actually within the tropical belt. The United States, therefore, presents a much more favorable soil for the transplantation of tropical diseases than does Europe. Realizing this, numerous American writers on tropical diseases have sounded in the last seven years notes of warning and alarm. Their apprehensions are based more on theoretical grounds than on observed facts, but for all that are worthy of our most serious consideration. The object of this inquiry is to determine, if possible, how great this danger is. What are the prevailing diseases of our tropical possessions? Which of them, if any, has appeared among us; which, if any, has gained a foothold on our soil; and which may possibly become widely distributed? Aside from endeavoring to answer these questions, we may with profit glance at the effect which the study of tropical diseases has had on the comprehension of cognate diseases in the United States, and also observe that it has led to the recognition in this country of unsuspected diseases of wide distribution and great economic importance.

UNCINARIASIS.

Perhaps one of the most startling results of the increased interest in tropical diseases has been the discovery that large sections of the southern portion of this country are infected with the hookworm, and that large numbers of the inhabitants are suffering from uncinariasis (ankylostomiasis) or hookworm disase. The starting point of this remarkable discovery was, almost certainly, the work of Ashford in Porto Rico in 1900. This observer noted the great frequency of the disease in that island, and pointed out that, to a large extent, the disability and wretched condition of many of the natives was due to it. The credit for drawing attention to the probability that the disease was widespread in our southern states is due to Charles Wardell Stiles, the zoologist of the Bureau of Animal Industry, and to him also is due the credit of amply proving what he at first brought forward merely as a probability. It would be out of place here to go into detail as to the clinical history of this disease, or the minute structure of the parasite which causes it. Mention must be made, however, of Stiles' discovery that the American uncinaria differs from that of Europe. It will be of interest to consider the geographical distribution of uncinariasis in this country, the main facts connected with the method of its spread, and the evidence as to the likelihood that it will become more widely prevalent than it is at present.

Up to the year 1900 not more than ten authentic cases of uncinariasis were on record in American literature, though there are statements by southern physicians in the writings of the early part of the nineteenth century which leave little doubt that the disease was then prevalent. During 1900 and 1901 only nineteen cases of the disease were reported, but in 1902, following the publication of Stiles' monograph on "The Significance of the Recent American Cases of Hookworm Disease in Man," the number of reported cases rose at a bound to 524. In 1903, 273 cases were

* Oration on State Medicine at the fifty-sixth annual session of the American Medical Association, Portland, Oregon, July 11-14, 1905. Published through the courtesy of the *Journal of the American Medical Association*.

reported; in 1904, 334; the number this year will probably not be so large, as the disease is no longer a rarity to southern physicians, and they will not be so apt to record cases. Prior to 1900, then, possibly ten authentic cases of hookworm disease had been reported; since this date I have been able to collect from the available American literature 1,212 cases, of which 1,095 originated in the United States, and 117 were imported from other countries, mainly from Porto Rico and the Philippines. Of the latter 62 are reported by Gunn, and occurred in San Francisco, mainly among Porto Ricans.

If we separate the domestic from the imported cases we find that this disease is distributed mainly through the southern states along the seaboard from Virginia to Texas. But it is not confined to seaboard states, for Missouri and Tennessee are also infected. The states in which the disease is known to be indigenous, and probably widely distributed, are Virginia, North and South Carolina, Georgia, Alabama, Florida, Louisiana, Texas, Mississippi, Missouri, and Tennessee. This list of states includes only those in which definite evidence of the presence of the disease has been furnished; it does not include, I think, all of the infected states. Taking into account the similarities of soil and climate, any one who will take the trouble to make a map of the known infected area will feel convinced that Arkansas, Indian Territory, Oklahoma, West Virginia, Kentucky, and the southern portions of Illinois, Indiana, and Ohio are also probably infected. The physicians in some states have shown a lamentable lack of enterprise in investigating this disease, while in other states extensive and valuable studies have been made of it. As I have already stated, 1,095 cases of domestic uncinariasis have been reported since 1900, 824 of these have been observed in three states: Georgia, Alabama, and North Carolina. This has been due to the interest and energy of single physicians, in Georgia of Claude A. Smith, Warfield and Harris; in Alabama of E. D. Bondurant, and in North Carolina of Nicholson and Rankin. A knowledge of the distribution of the disease is not merely of academic importance, for the economic aspects of uncinariasis are paramount. There is little doubt that the stigma of laziness and general inefficiency which has attached for generations to the so-called "poor whites" of the South has been earned by them not as a result of qualities due to innate "cussedness," but because a large percentage are suffering from uncinariasis with the resultant physical and mental deterioration. This being the case, a plotting out of the infected areas is one of the first steps which must be taken preparatory to stamping out the disease. This is only one step, however, the others depending on our present conception of its method of spread. At present there are two main theories as to the means by which the parasite gains entrance to the body, the one presupposing that it enters through the alimentary canal, the other that it gains entrance through the skin. The advocates of the former theory hold that polluted drinking water and food soiled by dirty hands are the means of introduction, the advocates of the latter, that the so-called "ground itch" is the point of entrance of the *Uncinaria rhabdites*. There is a good deal of evidence in support of both views, though the work of Claude A. Smith and of Nicholson and Rankin favors the idea that the cutaneous form of infection is the more important. In view of this the wearing of shoes, especially during the rainy season, becomes the most important prophylactic measure, though the necessity for pure water supplies and the proper disposal of excreta still remain of great importance. In all such matters the enforcement of hygienic laws can never be obtained without education of those who are at fault. As uncinariasis is essentially a country disease (I have not been able to find on record a single American case which originated in a city), the question is one which must be dealt with by the country physician, on whose back falls a heavy load of responsibility. The stamping out of this disease is, of course, of great economic importance to the South, but, further than this, the question arises whether it may not be of importance to other parts of the country. Is there any chance that uncinariasis may become more widely distributed than it is at present? The question is a hard one to answer. While there has not been a lack of physicians who have predicted such a spread, it cannot be said that there is much actual evidence that it has occurred. There are a few instances in American literature in which the evidence plainly points to infection of natives from imported cases. Such, for example, are some of the cases reported by Möhlau in Buffalo, where Polish and Italian laborers contaminated a brickyard. That such sporadic outbreaks can and will occur can not be denied, and physicians all over the country should be on the lookout for them. Whether the disease will ever become widespread outside of its present habitat is quite another story. It must not be overlooked that a variety of circumstances are necessary to its spread; the right kind of soil, sufficient heat, and enough moisture for the parasite, and a lack of certain hygienic precautions on the part of the inhabitants of the area to be infected. The absence of any one of these conditions may be fatal to the dissemination of the disease. Considering the fact that uncinariasis has existed in the South for at least one hundred years, and probably longer, it does not seem very probable that it will ever extend much beyond its present limits. What is needed at present, then, is a more accurate knowledge of its distribution, and the inauguration of an educational and sanitary campaign to effect its extermination.

DYSENTERY.

One of the first diseases which the American army surgeons in the tropics had to confront was that scourge of camps, dysentery. The study of the acute form of the disease had received a great impetus from the work of Shiga in Japan, and

the investigation of this condition in the American troops in the Philippines, instigated by Flexner, has since been carried on by Strong and Musgrave, J. J. Curry, and Charles H. Craig. It can fairly be said, I think, that our conception of the etiology of dysentery, and particularly of the tropical form, has been completely revised in the last few years, and this revision has depended, in no small measure, on the work of American investigators. So far as tropical dysentery is concerned, the studies of recent years have taught us to recognize two distinct forms, the bacillary and the amebic. The bacillary form, of which the acute dysentery of the tropics represents the most common type, is due to an organism first described by Flexner, and closely allied to the bacillus described by Shiga in the epidemic dysentery of Japan. In the chronic forms the ameba seems to have held its ground as the main causal agent, though the earlier investigators in the Philippines seemed inclined to think that it was usually a secondary invader. Our knowledge of the life cycle of the ameba, of the differentiation of pathogenic from nonpathogenic forms, and of the cultivation of the organism, has been achieved in the past few years, and is associated with the names of Craig, Strong and Musgrave, and Caspar Miller. A more exact knowledge of the complications of dysentery has also resulted from the work of our army surgeons, and it is to be especially noted in this connection that the so-called "tropical" abscess of the liver is nearly always due to the amebic as opposed to the bacillary form.

The most surprising and unlooked-for result of the stimulus given to the study of dysentery has been the discovery that the same group of organisms which are responsible for tropical bacillary dysentery are also concerned in dysentery in this country, and in certain forms of the summer diarrheas of infancy. The first steps in determining these relationships were taken under Flexner's guidance during 1902. In that year Vedder and Duval published the result of their work on the dysentery of the United States, work which was based on both sporadic and epidemic cases, and which showed that certain types of dysentery all over the world were due to the Shiga group of bacteria. In the same year Duval and Bassett published their preliminary announcement of the isolation of bacteria of the same group from cases of infantile summer diarrhea. Subsequent studies, conducted mainly at the large centers in the East, have, in the main, confirmed these observations, and have led to more accurate knowledge of both the clinical and bacteriologic aspects of these two classes of disease. Since 1903 investigation has been mainly focussed on the summer diarrheas of infancy, the scourge of the tenement districts of the large cities. These studies have resulted in the classification of the *Bacillus dysenteriæ* into three main types, a differentiation which was suggested in part by Gay and Duval in 1903, and which has since been rendered more exact by the work of Hiss and Russel, and that of W. H. Park and his associates. On the clinical side it has been shown that all classes of summer diarrhea are not due to organisms of the dysentery group, but that certain types associated with mucus and blood in the stools are nearly always associated with them. It has also been shown that these organisms, like the pus cocci, may give rise to primary infections, or may play the rôle of secondary or terminal invaders. Mild cases without blood in the stools may also be due to this group of organisms, accurate and early diagnosis only being possible in any type of case by means of a bacteriologic examination of the feces. The serum reaction, while of some value, appears late in many cases, and is not available for early recognition of the disease.

In his report on Philippine dysentery Flexner suggested the possibility of serum therapy in these cases, and the discovery of the relation of the *Bacillus dysenteriæ* to infantile summer diarrhea led to attempts at the production of a curative serum. During 1904 such a serum was used in a number of outbreaks of dysentery and summer diarrhea. The results, as a whole, have been disappointing, and will probably improve as we gain in experience. As Booker pointed out in 1903, little is to be expected from the serum in cases in which marked anatomic lesions are present. The work done under the Rockefeller Institute and summarized by Holt shows that the serum to be of value must be used early and in repeated doses. Judging from the results of Shiga in Japan more is to be expected for the serum treatment, and, as a matter of fact, it has not yet received a fair trial in this country. At present we need more knowledge regarding the natural history of the dysentery germ, its method of introduction, and the distribution of this form of infection in the United States. As regards the means by which the germ is introduced into the body there is already some evidence, both from the Philippines and this country, that contaminated water is at fault, but the whole matter needs more thorough investigation. The distribution of this form of infection has hardly been studied outside of the large cities of the East, and although the severe forms of infantile diarrhea are almost unknown on the Pacific Coast, there is little doubt that they exist in the South and Middle West.

YELLOW FEVER.

At the time that the Island of Cuba was occupied by American troops, in 1898, yellow fever had been endemic there for 130 years. The disease was not wide-spread, but was mainly confined to the coast towns, and was particularly prevalent in Havana, the continuous stream of non-immune Spanish immigrants serving to keep up the infection. A great deal of study had been devoted to the disease at this time, and in the years immediately preceding the Spanish War renewed interest had been awakened by the work of Sanarelli, who claimed to have found the causal agent in his *Bacillus icteroides*. His claims had met a good deal of opposition, especially from Sternberg, in this country, and many yellow-

fever experts did not accept his results. In view of the prevalence of the disease, and the constant menace which it offered to our southern states, a commission composed of Walter Reed, James Carroll, Jesse W. Lazear, and Aristides Agramonte was detailed to Cuba still further to study it. The commission presumably started out with a disbelief in Sanarelli's work, for certain of the members had published investigations showing that the *Bacillus icteroides* was closely allied to, if not identical with, the hog-cholera bacillus. While Sanarelli's work was repeated as a necessary precaution, and was proved to be erroneous, the commission concentrated its efforts on the investigation of the relation of the mosquito to yellow fever, a relationship which had been insisted on by Carlos Finlay of Havana for nearly twenty years, and which the work of Carter on the time limit between primary and secondary cases rendered probable.

It is not necessary to go into details as to the methods used by the commission in their work, further than to state that they were scientifically above reproach. It will be of interest, however, to consider their results, and the influence which they have had on the practical aspects of yellow-fever quarantine. Briefly stated, these results were as follows: The proof that Finlay's conception that yellow fever is conveyed by a certain variety of mosquito (*Stegomyia fasciata* of Theobald) is correct. The demonstration that a certain time must elapse after the mosquito is infected before it can transmit the disease; that the causal agent is in the blood during the first few days of the disease, that it can be destroyed by heat, and that it can pass through filters which hold back some of the smaller forms of bacteria. The explosion of the old idea that the disease can be conveyed by fomites, unless these are of a character to allow of transmission in them of infected living mosquitoes. These are the main results, and they have led to greater accuracy in our knowledge of the incubation period of yellow fever, increased study of the yellow-fever mosquito, and an entirely new conception of the prevention of the disease. Since the original work of Reed, Carroll, Lazear, and Agramonte several independent observers have confirmed their findings, notably Guiteras in Cuba, Marchoux, Salembini, and Simonds in South America, and the working parties of the U. S. Public Health and Marine-Hospital Service in Vera Cruz, Mexico. The investigations carried on under the Public Health and Marine-Hospital Service have also supplied many details extending our knowledge of mosquito transmission, of the life history of the yellow-fever mosquito, and of quarantine methods against the disease. Few discoveries in medicine have led to more rapid and more brilliant practical results than those above cited. The story of the remarkable change in the yellow-fever history of Havana achieved by the work of Gorgas reads almost like a romance. When we consider that the annual number of deaths from yellow fever in Havana for the ten years preceding the establishment of the mosquito theory averaged about 500, and that under Dr. Gorgas' administration they were cut down in two years to nothing, we can enthusiastically echo the sentiments expressed in a resolution of the conference of State and Provincial Boards of Health in which they say: "We regard (it) as one of the most brilliant achievements of the application of sanitary science to public-health work ever accomplished." Judging from recent reports, it seems likely that Gorgas will repeat his Havana success in the Isthmian Canal zone. We have still to discover the cause of yellow fever and we have still to ward off its advances in our southern states. So long as our Central and South American neighbors pursue their present lax sanitary methods we are liable to have sporadic outbreaks of the disease in those regions in which the *Stegomyia fasciata* can multiply. As Carter and Howard have shown, this mosquito is widely distributed in the subtropic portions of our country, and it behooves us to continue with the work of mosquito extermination, to increase its range as rapidly as possible, and to keep up with its old-time strictness the quarantine of vessels, especially sailing vessels, from infected ports. The protection of our land boundaries to the south will, of necessity, be much more difficult, and, judging from the recent experience in Texas, it is by this route that infection is now most likely to reach us.

MALARIA.

The soldiers returned from Cuba and Porto Rico, and, later, those from the Philippines, offered an opportunity for the study on a wholesale scale of certain aspects of malaria, an opportunity which was grasped by both military and civilian physicians. During and immediately following the Spanish War the accomplishment of greatest importance resulting from this study was the overthrow of the refuge of the careless diagnostician, typho-malarial fever. Those physicians who had studied malaria and typhoid fever carefully before the war, and who had controlled their diagnoses by blood examinations, had always been skeptical about the existence of combinations of the two diseases, and had published from time to time protests against the indiscriminate use of the term typho-malarial fever. It needed the studies of the camp fevers, however, to prove to the satisfaction of most physicians that the combination was exceedingly uncommon, and that when it occurred the malarial fever preceded, or more commonly followed, the typhoid fever. In his remarks on the subject, based on the examination of the blood of 159 typhoid cases at Camp Wikoff, Ewing says: "In no case of undoubted and established typhoid fever were malarial parasites found in the blood in connection with any of these sudden rises of temperature (in typhoid), but only at the onset of the disease or during convalescence"; and later in his article: "In short, in spite of painstaking effort, the attempt to find a case of typhoid fever and active malaria progressing simultaneously was unsuccessful." Aside from this,

the clinical study of the disease has received but few important additions since 1898, though mention must be made of the valuable studies of Craig on latent and masked malaria, studies which showed how great the danger to a community might be from soldiers returned from the tropics. In his article published in 1904 Craig states that 25 per cent. of the soldiers returning from the Philippines show latent or masked infections, and in a large percentage of these cases the parasite is the estivo-autumnal crescent, a stage of the organism capable of development in the mosquito. The same observer cites one company of sixty men in which forty-one had parasites in their blood, and yet but fourteen complained of illness.

As far as the parasitology of malaria is concerned, the past seven years have been marked by great simplification in staining methods, but discoveries of paramount importance have not been numerous. The studies of Craig on estivo-autumnal fever have tended to confirm the views of the Italian school as to the quality of its parasite, and the work of Ewing on the tertian parasite has thrown light on its early sexual history in the circulating blood. Working Party No 2 of the Yellow Fever Institute has been able to show that at the time of the malarial chill there is present in the blood a toxin, and have been able to produce a chill by the intravenous inoculation of filtered blood extracted during the paroxysm.

The study of the distribution of the malarial mosquito has been carried on in a few places, in Boston by Theobald Smith, in the Valley of the Androscoggin by Jordan, and in Baltimore by Hirshberg and Dohme, but the amount of work which has been accomplished in this direction and the time and money which have been expended in the attempt to exterminate the malarial mosquito are almost infinitesimal when we consider the territory affected by the disease, and the losses resulting from it. Woldert estimates the annual financial loss in Texas alone at over $5,000,000, and if all the infected zones in the United States are considered the loss must be appalling. Like yellow fever, malaria is a perfectly preventable disease, but to stamp it out requires either destruction of malarial mosquitoes, or protection and sterilization of infected individuals. In this country mosquito extermination has always been the favored plan, but before it can be accomplished a much more complete knowledge of the distribution of the anopheles is necessary, and much more thorough education of the public as to the necessity of the work. The danger that the disease may be introduced into uninfected areas by soldiers returning from the tropics is a real one, though, as Theobald Smith has shown, it is unlikely that the estivo-autumnal parasite will be introduced into the northern states. Still, we have plenty of southern territory not yet infected, and the extermination of mosquitoes would prevent the possibility of such contamination. The question is one which has not yet been seriously considered in large sections of the country, but is, nevertheless, of the greatest importance.

FILARIASIS.

The work of Ashford in Porto Rico, and of Calvert in the Philippines has shown that filariasis exists in both places. In Porto Rico it is probably widely distributed, as Ashford found it in thirty out of 250 soldiers in the Porto Rican regiment. Cases of Gunn and of Brown have shown that infected individuals from this source have already reached this country. In the Philippines the extent of the disease is doubtful. Calvert found the filaria in only two out of 426 Filipinos, but it is to be noted that both of these individuals came from the same district, and it is likely that the disease is much more prevalent in some places than in others. In this country several domestic and imported cases have been reported since 1898. It seems extremely likely that the disease is much more common in the South than the literature would indicate, and that it is often overlooked. The fact that one man, De Sassure, of Charleston, was able to report twenty-two cases, most of them originating in the United States, is pretty strong evidence that the disease is much more prevalent than is generally supposed. It is certain that there are present in this country varieties of mosquito capable of transmitting the filaria. As these generally belong to the *Culex* family, which is widely distributed throughout the United States, it seems possible that there is real danger of new districts becoming infected by returning soldiers or Porto Rican laborers. Before the matter can be definitely settled we need more information as to the exact varieties of mosquito which can transmit filariasis, and their distribution in this country. At present it is quite generally assumed that a number of varieties of *Culex* and at least one of *Anopheles* can transmit the disease. We believe it was Myers who brought forward evidence to the contrary and the matter is one which needs further investigation.

MALTA FEVER.

The fact that Malta fever was present in Porto Rico was first demonstrated by Musser and Sailer, and later by Cox and Curry. In 1900 Strong and Musgrave called attention to its occurrence in the Philippines, and still later cases occurring in returned soldiers were described by Curry and Craig. The number of cases which has been described is small, and practically all of them are in soldiers and sailors. In the seven years which have elapsed since the first case was reported in this country, no case originating here has been described, and it seems that there is little likelihood of the disease becoming disseminated in the United States. It is within the bounds of possibility, as Curry pointed out, that it already exists in the southern states. In its acute form it is easily confounded with malaria, and in its chronic stages it is generally diagnosed at first as chronic rheumatism. The serum reaction of the disease is so reliable, and the test is so easy of performance, that all cases with doubtful fevers in the southern states should be subjected

to it. It seems highly probable that if this is done systematically the disease will be found to be present.

TRYPANOSOMIASIS.

The relation of trypanosomes to animal diseases was observed in the middle of the last century, and renewed interest has been awakened in these parasites in recent years by the discoverv of new forms of animal trypanosomiasis, and by the observations on human trypanosomiasis initiated by the work of Dutton. The presence of the trypanosome infection known as surra among horses and buffalo in the Philippines was noted soon after the American occupation, and the results of American researches on this disease may be found in the valuable monograph of Musgrave and Clegg. Up to 1903 attempts to isolate trypanosomes in pure culture had been ineffectual, but in that year McNeal and Novy published the results of their work on the rat trypanosome. They were able to obtain the first successful pure culture of a pathogenic animal parasite with the absolute demonstration of its causal relation to the disease. Up to this time many observers believed that the different forms of animal trypanosomiasis were due to the same organism, but during 1903 and 1904 Novy, McNeal, and Ward were able to cultivate the trypanosome of nagana or tsetse disease, and also that of Philippine surra, and could demonstrate that the parasites from these different diseases showed variations in structure and mode of growth. Later Lewis and Williams succeeded in cultivating the frog trypanosome, showing that this also differs from the other forms. Some forms of animal trypanosomiasis have appeared in the United States, dourine having been observed in Nebraska. Whether there is any possibility of the introduction into America of human trypanosomiasis will be difficult to determine until we know more of certain forms parasitic in man, and the method of their spread. The form of the disease which is most likely to appear in this country is the affection known, likely to be found in the Philippines, and hence most in India, as kala-azar or dum-dum fever. The parasite of this disease, usually spoken of as the Leishman-Donovan body, has recently been shown by Rogers and Chatterjee to belong to a sub-family of the trypanosomes. The method of transmission of this form of the disease to man is not definitely known so far as we can determine; it is probably transmitted like nagana, by an insect, most likely a mosquito. The possibility of its introduction into this country will probably depend on the presence or absence of some insect host.

DENGUE.

A disease which does not seem to have received the study which it merits, considering its frequency, is dengue, or break-bone fever. The Reports of the Surgeon General of the Army for 1902 and 1903 show that in the Philippines it caused, in the former year, 31.67 cases of sickness per 1,000 of strength, and in the latter year 171.39 cases per 1,000 of strength. Presumably it has not been carefully studied in the Philippines, or in the South, where it also occurs, on account of its short duration, and the almost absolute lack of fatalities. In the Isthmian Canal Zone it has been studied in the last two years by Sutton and Carpenter. They have shown that it is probably not of the malarial class of diseases, but that it may, as Graham claimed, be transmitted by the mosquito. Their studies of the blood show that it is one of the diseases accompanied by leucopenia and relative lymphocytosis, and their bacteriologic studies suggest that a bacillus similar to the influenza bacillus may be the cause. The disease is one which, judging by its past history, is unlikely to spread beyond the southern parts of this country. It is worthy of more extended study by modern methods than has yet been devoted to it, and American physicians in the Philippines and the Isthmian Canal Zone will probably have excellent opportunities to clear up many moot points in connection with this disease.

ASIATIC CHOLERA.

During 1902 Asiatic cholera appeared in Manila, spread to the neighboring islands, and caused over 90,000 deaths before it was stamped out. The incidence of the disease among the whites was comparatively small, but among the natives it ran rife, owing to their lack of hygienic precautions and the favorable temperature conditions. In many instances the disease was not carried, as usual, by contaminated water, in fact, in the large cities indirect contact through food was a much more frequent method of spread. On account of the violent local reaction produced by Haffkine's cholera prophylactic the natives objected to its use, and as the scattered distribution of the population made it almost impossible to control them, this method was given up. The objections to Haffkine's prophylactic led R. P. Strong to attempt the production of a protective serum lacking in the irritating properties of those hitherto used. By a process of bacterial autolysis followed by filtration of the culture he was able to produce a practically non-irritating protective. From the experimental standpoint Strong was able to show that animals and men treated by his method showed but little local reaction, yet developed in their blood substances strongly bactericidal to the cholera spirillum. As the cholera had practically disappeared from the Philippines at the time that Strong's work was completed there has yet been no opportunity to put his method to a practical test. From what we know of the disease there is little likelihood that it will ever get a foothold in this country under our present quarantine regulations.

PLAGUE.

The appearance of plague in several parts of the civilized world in 1900, and especially its appearance in San Francisco and Philippines, called the attention of American medical men to this disease. Luckily, but few of them had an

opportunity to study it, and most of the American work on this disease has been done in the Philippines, where, according to Munson, 970 cases with 812 deaths occurred between January, 1900, and September, 1903. It cannot be said that anything startlingly new was discovered during this period, but a good deal of valuable confirmatory work was turned out. In this connection must be mentioned the work of Barker, Flexner, and Novy on various aspects of the subject, the work of Calvert and Ewing on the occurrence of plague bacilli in the circulating blood, and the work of Herzog and Hare on latent and ambulatory plague. The outbreaks of the disease in Australia, in Honolulu, in Glasgow, and in San Francisco have served to warn us of the necessity of being constantly on guard against its insidious approach. The recent outbreak in Leith, in which, as in the San Francisco outbreak, the origin of the disease was in doubt, shows us that at all our seaports constant vigilance must be maintained, and this must be the case so long as endemic foci are present in Asia. In the preventive work in this country, in this as in other infectious diseases, too much praise cannot be given to the officials of the U. S. Public Health and Marine-Hospital Service, who, besides having to bear the burden of their appointed work, have often also to suffer the slings and arrows of outrageous politicians, and the contumelious taunts of misguided citizens.

CONCLUSION.

We have now considered the more important of the tropical diseases which occur in Porto Rico, the Philippines, and the newly acquired Isthmian Canal Zone, the effects which their study has had on American medicine, and the chances of their becoming domiciled in this country. It has been possible to touch on many important subjects but lightly, and I ask your indulgence for the sketchy manner in which the subject has been treated. Of necessity a number of tropical diseases have not been mentioned, tropical ulcer, frambesia, bilharziasis, and blackwater fever, for example. These diseases are all present in our tropical possessions, but are of relatively minor importance, and as yet have received but little attention from American observers. Two general conclusions are forced on us as a result of this study, one being that many of the so-called "tropical" diseases are widely scattered through the subtropical portions of this country, the other that the acquisition of tropical possessions by the United States has had a markedly stimulating effect on American medicine, and has led to valuable work, some of it of the very first rank, all of it showing evidences of earnest and painstaking effort.

ACCORDING to the *Medical Record* a woman recently died in Mountain Top, Pa., who had given birth to twenty-five children, and in this number twins occurring only twice. Of the children all but seven are living.

Original Articles.

A CASE ILLUSTRATING THE LOCAL CONDITIONS AFTER A SUPRAPUBIC ENUCLEATION OF THE PROSTATE.

BY ARTHUR L. CHUTE, M.D., BOSTON, MASS.

THERE have been relatively few opportunities to study the local anatomical conditions following the method of suprapubic prostatectomy that has been re-vivified and popularised by Freyer. The following case is of interest as showing the conditions of the bladder and surrounding structures in a patient dying twenty-three days after a suprapubic enucleation of the prostate; beside this, it presents some other points of rather more than usual interest. As the chief interest in this case has to do with the removed prostate and the post-mortem findings, the clinical history is not given in full.

The patient, a man of seventy-two, was first seen with Dr. H. L. Houghton in February, 1904. The history of his prostatic trouble extended back ten years. For two years he had been absolutely dependent on a catheter, passing it every hour or two during the day and ten times at night. He suffered constant bladder pain. His prostate was smooth and elastic, not fixed in the pelvis, not much increased in size. Though there was a small gland under the rectal mucous membrane on the left, there were no chains of lymphatics to be felt by rectum, nor were there any deep inguinal or abdominal glands or other conditions suggestive of malignancy. A catheter had to be inserted nine inches before urine appeared. A stone searcher showed several calculi. The urine was very foul, but showed no renal elements.

On Feb. 26, 1904, a suprapubic cystotomy showed six phosphatic stones in a markedly thickened and trabeculated bladder. There was a valve-like projection from the left lobe of the prostate that arose distinctly at the side of the internal meatus. This mass was the size and shape of a small dried fig, and was so hinged that it closed over the internal meatus. This valve-like projection and a small posterior lip were removed — satisfactory convalescence.

At first the patient passed urine voluntarily. During the summer he gained twenty pounds in weight. The retention slowly recurred, but was unattended with pain until seven months after operation. In September, 1904, there was a recurrence of his former symptoms, though he could still pass a little urine when at stool.

An examination in November, 1904, showed that the patient's general condition was better than at the time of his first operation. The prostate presented no appreciable change. The cystoscope showed another calculus. The urine was as before, with the exception that it now contained a little microscopic blood. The upper part of the suprapubic scar was very thin and bulged on straining.

Dec. 5, 1904, I operated again with the intention of doing a suprapubic enucleation of the prostate. The fold of peritoneum covering the bladder, which had been pushed back at the previous operation, had re-established itself between the bladder and the abdominal wall, and was densely adherent just above the symphysis. In peeling back this fold it was torn through. Under these circumstances, the septic condition of the urine made it seem unadvisable to open the bladder at this time. The hernia was re-

paired and the lower part of the wound packed with gauze, so as to give easy access to the bladder later. The convalescence was uneventful.

Nine days later the bladder was opened and a phosphatic calculus the size of a large olive removed. The enucleation of the prostate was carried out by the method advocated by Freyer. The mucous membrane at the internal meatus was torn through, and the plane of cleavage being found, the prostate was separated from the surrounding tissues with the right forefinger, while the gland was steadied by two fingers of the left hand in the rectum. An elastic catheter passed to the bladder gave an extra guide to the position of the urethra. The adhesions between the prostate and its bed were very dense, and those between the lobes and the prostatic urethra were even more so. As a para-urethral enucleation was impossible, the prostate and a portion of the prostatic urethra were removed as one piece. The bleeding was easily controlled by hot bladder irrigations, and the suprapubic wound was closed about a large drainage tube. The operation was well borne.

The prostate, which weighed 469 gr., had the typical appearance of a dense fibro-myomatous gland. The left lobe made the larger projection into the bladder. The urethra, which was V-shaped at the internal meatus, was flattened laterally, thickened, and so intimately connected with the prostate that even after removal it was only with great difficulty that it could be separated.

Convalescence was uneventful up to the eleventh day. On the morning of the eleventh day the patient passed a little urine voluntarily for the first time. That afternoon the urine had a bloody tinge. The amount of blood gradually increased, until on the fourteenth day after operation the urine was quite bloody. Bladder irrigations had no effect on this bleeding. The bleeding did not make much impression on the patient's general condition until the seventeenth day after operation. His pulse then began to show its effect, and from this time he had little appetite and vomited occasionally if feeding was pushed. The bleeding continued steadily. The quantity of urine remained about the same. The patient gradually failed and died on the twenty-third day after operation. He was at no time delirious. His highest temperature was 99.6°, on the second day. From the fifth day the temperature was below 99°.

The recurrence of bleeding, after it had once stopped, in connection with the gland felt by rectum, led me to suppose that I had to do with a prostate that had become malignant, and that after operation there had been a rapid involvement of the bladder; a condition I had once seen.

It was found post-mortem that the urethra took a 28 F. sound easily. The urinary organs were then removed *en masse* and I am indebted to Dr. G. B. Magrath for a careful examination of them.

Although the prostatic urethra had been torn across and a portion of it removed, it was found that the fibres of the compressor urethræ had not suffered. The cavity from which the prostate had been enucleated had contracted very much and formed a funnel-like prolongation of the bladder, at the back of which the anterior border of the trigone showed itself as a distinct raised shelf or ledge. This cavity was fairly clean and covered everywhere but on its floor by a new growth of mucous membrane. There was no sign of infiltration or of any suppuration in the tissues about this cavity.

The bladder and rectum having been removed *en masse*, it was possible to estimate very accurately the thickness of the septum between them. This was at no point less than a quarter of an inch, though it is conceivable that it may have been somewhat thinner at the time of operation, and a subsequent thickening have come about as the result of contraction.

The bladder itself was greatly thickened and showed the signs of a severe grade of chronic cystitis. There was marked trabeculation and several small sacculi. One of these sacculi, situated at the inside of the left ureteral orifice, contained a small trilobed calculus that had so compressed the left ureter in its intramural portion that above this point it was dilated, thickened, and showed phosphatic deposits on its walls.

The left kidney was considerably enlarged and soft. There was a sharp bend where its ureter was adherent to its lower pole. The kidney pelvis was dilated to several times its normal size and had the appearance of having been the seat of a suppurative process of long standing.

Toward the upper pole of the kidney there was a cavity the size of a marble, the outer surface of which was just under the capsule, while on its inner side this cavity connected with the kidney pelvis by a small irregular opening. The lining of this cavity was smooth and quite unlike that of the suppurating kidney pelvis. At the time of examination this cyst was filled with blood, as was the left kidney pelvis and ureter. In the edge of the torn septum that had separated this cyst from the pelvis there was a small open-mouthed vessel filled with clot. There seemed to be no reasonable doubt but that this small vessel, torn when the cyst burst into the pelvis, was the sole source of the fatal hemorrhage. Toward the lower pole of the left kidney there was an unruptured cyst the size of a cherry. The right ureter was normal. The right kidney was slightly lobulated, with a small retention cyst in its cortex.

I wish to call particular attention to several of the conditions found in this case, to some because of their relative rarity, to others because of their bearing on the different operations undertaken for the relief of prostatic obstruction.

The cause of the absolute retention that existed when this patient first came under observation was the valve-like mass that arose from the intra-vesical projection of the left lobe. This shut over the internal meatus and made voluntary micturition absolutely impossible. Pedicled masses arising just behind the internal meatus are not uncommon; those arising laterally, as this did, are referred to by Proust in his monograph as being very rare.

A second element in this patient's obstruction, and one that I did not at first appreciate, was the lateral pressure exerted upon the prostatic urethra by the relatively small fibrous prostate. That this lateral pressure was an element of importance equal to the obstruction at the internal meatus seems proven by the fact that even after the removal of the valve-like mass and slight posterior lip, and after the partial restoration of voluntary micturition, the bladder very soon became unable to force urine through the compressed prostatic urethra. This sort of obstruction may exist with a gland that is very little increased in size. The placing of too much importance upon the obstruction at the bladder outlet and the ignoring of this element of lateral pressure was undoubtedly a factor in making the partial suprapubic prostatectomy, the precursor

of the present transvesical enucleation, an unsatisfactory operation.

The condition of the left ureter and kidney may be referred to in passing as illustrating very strikingly the harm that may follow upon chronic retention when the bladder is infected.

The rupture into the pelvis of the cyst in the cortex of the left kidney and the consequent hemorrhage show a complication that is, so far as I know, unique, and which it was quite impossible to foresee. It would probably have been possible to have avoided the fatal termination had the source of the hemorrhage been patient showed (Fig. II) would, if left, offer an obstruction to urination not unlike that of a strictured section of canal; an obstruction that it would be impossible for a weakened bladder to overcome.

The suprapubic route permits of the easy recognition as well as of the ready removal of all intravesical overgrowths, whether they arise from the lateral lobes or from aberrant islands of prostatic tissue. An examination of the specimen in this case shows how thoroughly one eliminates all possibility of future obstruction arising from the prostate itself. If one adopts

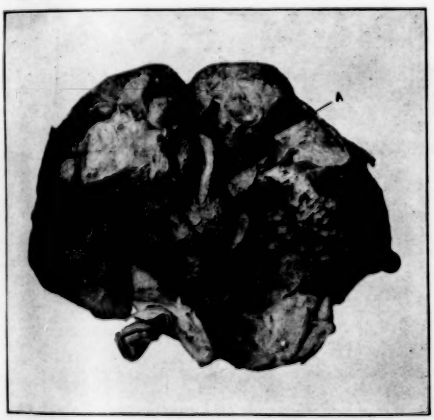


Fig. 1. — *A*, Point where vessel ruptured.



Fig. 2. — *A*, Thickened urethra.

complications, made for the suprapubic enucleation.

In those instances in which after a perineal removal of the prostate the use of a catheter has been necessary it seems most probable that some obstruction in the region of the internal meatus has been overlooked. It is, however, possible that the remaining obstruction may have depended upon a thickened, fibrous prostatic urethra, left after an enucleation of the lobes. It seems probable that a thick-walled, contracted, prostatic urethra, such for instance as this across just anterior to the veru montanum. Walker gives this as the usual point for the separation to take place. The only possibility of injury to the compressor, and therefore of incontinence, would seem to depend on an actual evulsion of the membranous urethra; this the posterior layer of the deep perineal fascia prevents. Up to a short time ago there had been, according to Proust, no reported cases of incontinence following the suprapubic enucleation. I know of no instances that have been reported of late.

paired and the lower part of the wound packed with gauze, so as to give easy access to the bladder later. The convalescence was uneventful.

Nine days later the bladder was opened and a phosphatic calculus the size of a large olive removed. The enucleation of the prostate was carried out by the method advocated by Freyer. The mucous membrane at the internal meatus was torn through, and the plane of cleavage being found, the prostate was separated from the surrounding tissues with the right forefinger, while the gland was steadied by two fingers of the left hand in the rectum. An elastic catheter passed to the bladder gave an extra guide to the position of the urethra. The adhesions between the prostate and its bed were very dense, and those between

conceivable that it may have been somewhat thinner at the time of operation, and a subsequent thickening have come about as the result of contraction.

The bladder itself was greatly thickened and showed the signs of a severe grade of chronic cystitis. There was marked trabeculation and several small sacculi. One of these sacculi, situated at the inside of the left ureteral orifice, contained a small trilobed calculus that had so compressed the left ureter in its intramural portion that above this point it was dilated, thickened, and showed phosphatic deposits on its walls.

The left kidney was considerably enlarged and soft. There was a sharp bend where its ureter was adherent to its lower pole. The kidney pelvis was dilated to several times its normal size and had the appearance

ity from which the prostate had been enucleated had contracted very much and formed a funnel-like prolongation of the bladder, at the back of which the anterior border of the trigone showed itself as a distinct raised shelf or ledge. This cavity was fairly clean and covered everywhere but on its floor by a new growth of mucous membrane. There was no sign of infiltration or of any suppuration in the tissues about this cavity.

The bladder and rectum having been removed *en masse*, it was possible to estimate very accurately the thickness of the septum between them. This was at no point less than a quarter of an inch, though it is

the removal of the valve-like mass and slight posterior lip, and after the partial restoration of voluntary micturition, the bladder very soon became unable to force urine through the compressed prostatic urethra. This sort of obstruction may exist with a gland that is very little increased in size. The placing of too much importance upon the obstruction at the bladder outlet and the ignoring of this element of lateral pressure was undoubtedly a factor in making the partial suprapubic prostatectomy, the precursor

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The condition of the left ureter and kidney may be referred to in passing as illustrating very strikingly the harm that may follow upon chronic retention when the bladder is infected.

The rupture into the pelvis of the cyst in the cortex of the left kidney and the consequent hemorrhage show a complication that is, so far as I know, unique, and which it was quite impossible to foresee. It would probably have been possible to have avoided the fatal termination had the source of the hemorrhage been recognized and an early nephrectomy done. It seems probable that the rupture of this cyst was brought about by a wave of extra congestion; it may have been simply the natural progression of the suppurative process in the kidney pelvis.

Up to the present time the immediate mortality of the complete removal of the prostate by the suprapubic route has exceeded that of removal by way of the perineum. Watson gives the mortality at 11.3% in 243 collected cases of suprapubic removal and 6.2% in 530 cases of perineal operation. Proust's figures are 11.88% for 244 suprapubic operations and 7.13% for 813 cases of perineal removal.

It is reasonable to expect of an operation that gives a larger immediate mortality than another that it shall show some adequate compensation. This the advocates of the suprapubic route claim, in that the suprapubic enucleation is not subject to certain complications, that occasionally mar the final result of the perineal operation. Proust, formerly at least an ardent supporter of the perineal removal, agrees that late complications are less frequently seen following the suprapubic than the perineal enucleation.

There are four disappointing end results occasionally seen with the perineal operation that it is claimed do not occur with the suprapubic enucleation. In a few patients the use of the catheter has been necessary: the obstruction has not been wholly removed; in some there has been a perineal urinary fistula; in other cases there has been incontinence, or, what is more common, an inability to hold more than a very little urine; lastly, there have been cases of recto-urethral fistula. While it is very difficult to determine the frequency with which these complications occur, they are reported not uncommonly. It is interesting to see that the anatomical conditions found in this case would seem to give evidence in favor of the claim of immunity from these complications, made for the suprapubic enucleation.

In those instances in which after a perineal removal of the prostate the use of a catheter has been necessary it seems most probable that some obstruction in the region of the internal meatus has been overlooked. It is, however, possible that the remaining obstruction may have depended upon a thickened, fibrous prostatic urethra, left after an enucleation of the lobes. It seems probable that a thick-walled, contracted, prostatic urethra, such for instance as this patient showed (Fig. II) would, if left, offer an obstruction to urination not unlike that of a strictured section of canal; an obstruction that it would be impossible for a weakened bladder to overcome.

The suprapubic route permits of the easy recognition as well as of the ready removal of all intravesical overgrowths, whether they arise from the lateral lobes or from aberrant islands of prostatic tissue. An examination of the specimen in this case shows how thoroughly one eliminates all possibility of future obstruction arising from the prostate itself. If one adopts Moynihan's modification and as a routine removes the prostatic urethra with the prostate, he avoids any possibility of trouble arising from a fibrous prostatic urethra. I believe for this reason that in the cases where the prostatic urethra is very adherent, and therefore probably thickened, it is preferable to remove it.

As there is no perineal incision in the suprapubic enucleation the possibility of the second complication, that of perineal urinary fistula, is very remote. The only way in which this could occur would be through a deep abscess opening in the perineum, which, so far as I know, has not been reported. As far as one can infer from the findings in this case there seems to be no tendency for infection to spread from the cavity from which the prostate is removed into the neighboring tissues. In spite of the undoubted superiority of perineal drainage, the suprapubic drainage seems adequate to prevent this extension. In this connection it is of interest to note how considerable a part of the cavity from which the prostate had been removed was recovered with mucous membrane in the twenty-three days that this patient survived operation.

The third complication, more or less trouble in controlling the urine, is undoubtedly due to an injury of the membranous urethra, and the fibres of the compressor urethræ muscle. It must be borne in mind that the function of the feeble internal sphincter is probably pretty well abolished in nearly all cases of prostatic obstruction and that the patient depends for control of his urine upon his compressor urethræ. In perineal operations injuries to this muscle are not infrequent and may be followed by an impairment of function, which depends partly upon the extent of the injury and partly upon the degree of repair that has taken place.

In this case the specimen of prostate and prostatic urethra shows that the urethra was torn across just anterior to the veru montanum. Walker gives this as the usual point for the separation to take place. The only possibility of injury to the compressor, and therefore of incontinence, would seem to depend on an actual evulsion of the membranous urethra; this the posterior layer of the deep perineal fascia prevents. Up to a short time ago there had been, according to Proust, no reported cases of incontinence following the suprapubic enucleation. I know of no instances that have been reported of late.

The thickness of the septum found post-mortem between the rectum and the cavity from which the prostate was removed has a bearing on the occurrence of recto-urethral fistula, the last of the complications mentioned as sometimes seen with the perineal enucleation. In this specimen the recto-urethral septum was at no point less than a quarter of an inch thick. Proust in his summary of the cases treated by this operation says that he has found no instance of a recto-urethral fistula. Watson in his summary of the complications of the suprapubic operation says "the rectum was injured in one case." The immunity that the suprapubic enucleation enjoys from this extremely annoying complication is to be attributed to several things: first, the field of operation is not in such close proximity to the rectum as is the case in the perineal operation; second, the presence of the recto-vesical fascia intervenes between the prostate and the rectum when the prostate is approached from above; third, the relation of the structures is less distorted during the suprapubic operation than during the perineal.

In this paper I have not attempted to take up the whole subject of the suprapubic enucleation of the prostate, but have tried rather to call attention to the immunity which it enjoys from certain complications and to show the reason for this immunity as illustrated by the anatomical conditions found in this patient.

It seems reasonable to expect that the mortality of this operation will be lowered as its technique is perfected, and without in any way detracting from the excellence of its results. A conversation that I had with Dr. Freyer some months ago points to the probability of this. At that time he told me he had done thirty-two consecutive suprapubic enucleations without a death. I am indebted to Dr. M. D. Miller for the photographs accompanying this article.

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SOME OBSERVATIONS ON THE TREATMENT OF EPILEPSY.*

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THIS paper is not written with the expectation of instructing this learned body in the treatment of epilepsy, but with the hope that it may excite a discussion that will add to the sum of my knowledge and enable me the better to serve these unfortunate people in the future. Neither is it intended to be an exhaustive treatise on the therapeutics of this disease. The ideal treatment for epilepsy is that of the Craig colony at Sonyea, of which our distinguished Secretary is the head, and our best efforts should be given to establishing such colonies at the earliest possible moment in every state in which they do not already exist. But, after we thus make provision for many of these unfortunate people, there will still remain a large number who will require treatment at their own homes or in our offices.

In considering the therapeutics of epilepsy in general, it is well to bear in mind the fact that there are spontaneous cures. The first one of these cases was brought to my attention some twenty years ago. I was called to see a man of sixty in convulsions. He had had an attack of la grippe, with high temperature and suppression of urine. The convulsions were soon determined to be uremic. On inquiring into his history, I ascertained that he had been an epileptic from early youth until the age of about twenty, when he left his home in London for America, having been assured by his physician that an ocean voyage would cure him. He landed in New York, and a short time afterwards came to Chicago, where he was successful in business, and from the date of his leaving the port in England until the time of his attack of la grippe, that is, during a period of about forty years, he had had no manifestations whatever of the disease. The ocean voyage is credited with having effected a cure in this case. The impress of his neurosis was manifest in two of his children, of whom one died insane, and another of delirium tremens after years of inebriety.

I have seen other cases in which there was the same spontaneous arrest of the disease. Such cases give reputation to many means of cure, and many things that cannot possibly have had anything to do with the results are credited with being cures for epilepsy. There is no more difficult problem in medicine than to separate the *post hoc* from the *propter hoc*.

Another difficulty that surrounds the therapeutics of the case is the fact that epilepsy is a symptom, not a disease. It may be the only symptom manifest, as in idiopathic or essential epilepsy, or it may be one of many symptoms, as an organic brain disease. Another difficulty in the way of a scientific therapy is the want of a positive pathology, but in this matter we are making headway. The theory of that gifted student of epilepsy, — Echeverria, — "that the medulla oblongata is the only seat of epilepsy," I think we all have abandoned, as we have many other theories, and that we are now of one mind, that the cerebral cortex is the seat of the disease, that neuroglia hyperplasia, with the destruction of neurons, especially those that originate in the second cortical layer, is, sooner or later, present, and that the whole is due to some toxic element not yet discovered. When this has been discovered, then and only then can we discard empiricism in the treatment of epilepsy.

Prevention. — I do not think sufficient attention is given to prevention in those who have an hereditary predisposition. These neurotic children have convulsions in infancy, and but little attention is paid to them. A physician may be called at the time, but the convulsion is over,

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and the case is dismissed from further attention. Such cases demand his most earnest efforts to ferret out the cause and remove it, and then to see that the child receives the kind of education and medication as will insure a vigorous physical development and a well-regulated mentality. Home training is not always the best for such a child, for the neurotic condition is an inheritance from mother or father, and this fact may create an environment by no means conducive to the end desired.

Some cases of epilepsy are traumatic, and in some the result follows because surgeons do not resort to exploratory operations early, with a view of preventing serious consequences, but delay operation until after convulsions have come on. It is impossible to estimate the damage done the brain by trauma. It frequently happens that there is no due proportion between the injury and the magnitude of the mischief the cranium has sustained, and with present modern surgical methods there is no possible danger that can result from an exploration, and it is often demanded, I am sure, in these neurotic subjects.

Before laying the foundations for therapy, every case demands a most thorough investigation. No part of the body should be overlooked in the examination. The blood, the urine, the feces, every possible source of reflex irritation in eyes, nose, mouth, vagina, uterus, penis, rectum, should be ascertained, and often surprisingly valuable information thus obtained. The prevention of individual convulsions is a matter of great importance, and the epileptic who has had an aura is fortunate, for then we have often the opportunity of arresting impending attacks. The seizures after a time become a habit of the body. The cause may be removed, and the habit may continue, or a minimum of toxicity become sufficient to discharge the cortical cells, and therefore every attack prevented is a step towards cure by breaking up a bad habit. The pearls of nitrite of amyl of proper size should be carried by every epileptic who has an aura, and at the proper moment they should be used. These attacks can sometimes be averted by other means. A patient under my care had an aura that began in his right hand. He carried around his wrist a slip noose of silk thread and when he felt the oncoming of the aura he quickly tightened it, and if he did so promptly he could stop the progress of the attack. He eventually obtained relief, and I am of the opinion that his perseverance in the breaking up of the sequence had as much to do with it as the internal medication he received.

In marking out our line of treatment we must bear in mind that in the pathogenesis of epilepsy we have auto-intoxicaion, increased irritability of the nervous system, deficiency of vaso-motor tonus and circulatory capacity and, lastly, cerebral sclerosis, and our plan of treatment must consider in due proportion these four factors, even though it is possible that the first factor is the foundation of the other three. The auto-intoxication in the majority of cases has its origin in the gastro-intestinal tract and to minimize this there must first be a careful regulation of diet. But for this purpose no special and universally applicable diet table is either necessary or desirable, as the digestive capacity and necessities of each case must be determined for themselves. The recommendation on the part of some to exclude meat entirely is a serious error. The majority are gormandizers; they eat voraciously and masticate imperfectly; these conditions must be corrected. They must be taught abstemiousness and slow and thorough mastication.

I was consulted some years ago by a physician engaged in a large country practice, who developed epilepsy and whose treatment on ordinary lines had been a failure. On investigating his case I found that after his long rides at night it was his custom to eat a very hearty luncheon, often of very indigestible food, and the convulsions invariably occurred at night. Supposing this had much to do with their manifestation, I put him on a diet of milk and crackers exclusively, continued the bromide treatment he was then taking, and the convulsions, from having been two or three a week, rapidly ceased and in six months he thought himself cured; he again began his habit of midnight luncheons, and back came the convulsive seizures. Returning to his abstemious diet, they again ceased and for many years, under a proper, regulated diet, he has been free from these attacks.

The condition of the stomach, especially the want of muscular tone, with more or less dilatation, is sometimes at the foundation of this toxicity; and then gastric lavage is indispensable. Insufficient intestinal elimination is a very common condition; so much so do I regard it, that even when patients come to me, telling me that they have a daily habit of evacuation which they regard as ample, unless there is some contraindication, I order them a compound cathartic pill (U. S. P.), at least once a week, and frequently direct colonic flushing with the normal saline solution. These measures of themselves are often inadequate, and intestinal antiseptics must be added to the treatment. Salol has given me the best results and I usually combine it with the extract of phytolacca. Phytolacca decandra is a drug not sufficiently appreciated by the profession at large. In that complex error in metabolism that we recognize as rheumatism it is of undoubted value, and in the errors of metabolism with which we are now contending I know it is sometimes useful. These two drugs are placed in capsules, and given before meals.

The increased irritability of the nervous system is best combatted by the bromides, the sodium bromide, being less depressing to the circulation and less disturbing to the digestion, is probably the best. I have rarely seen any advantage from the mixture of several bromides, although Brown-Séquard's formula is sometimes very useful, as it contains the potassium and ammonium bro-

mides. While the bromides are the most useful of all remedies in combatting the irritability of the nervous system, yet we all know the great damage that has been done by their excessive use. Epileptic insanity is vastly more frequent to-day than it was before the introduction of the bromides in the treatment of this disease, but it is the excessive use that produces this result. Sixty grains a day is a quantity that should seldom be exceeded, except for a special reason, and for a short time only. In nocturnal epilepsy a full dose may be given at bedtime, but in the great majority of cases the proper dose should be given three times a day, after eating.

The disagreeable bromide eructation is much diminished by the addition to the mixture of an alkali. In the Brown-Séquard formula, previously mentioned, the alkali is the carbonate of potassium. Where patients can afford it, the drug can be taken in an alkaline water, such as Vichy, which is the ideal water for this purpose; it should be given in a large quantity of water and always after meals. The constitutional effect of the bromides is increased by cutting out the chloride of sodium as much as possible from the dietary. If the sixty grains of bromide a day does not arrest the paroxysms, then I add to the treatment the fluid extract of solanum carolinense in one half to two dram doses in the bromide mixture. In some cases in which the bromides disagree this drug alone will control the seizures. Cases that resist this combination will sometimes yield by adding acetanilid to the treatment; this may be placed in capsule with the salol and phytolacca before meals. Some cases of nocturnal epilepsy that will not yield to this method of treatment are benefited by moderate doses of chloral or chloralamid at bedtime.

The circulatory and vaso-motor defect, so manifest in many cases, can be improved often by the use of the fluid extract of adonis vernalis, and this can be added to the mixture already mentioned of bromides and solanum. This drug — adonis vernalis — has all the properties of digitalis without its untoward effects; it does not disturb the stomach; it has no cumulative effect, and it has some sedative influence on the nervous system. It also has marked diuretic properties and thereby relieves the system of some of its accumulated toxins.

Strychnia is also a valuable remedy in meeting this indication, but it requires to be given in larger doses, than are usual, to secure the best results. In a case in which the bromides had been given in very large doses, so that the patient showed positive evidences of bromism, face and back being covered with acne, mental stupor very manifest, the attacks continued unabated, in a young, pale, anemic subject, the withdrawal of the bromides and the administration of strychnia sulphas in gradually increasing doses until the one twelfth of a grain was taken once in eight hours, the attacks, which had been daily, gradually ceased. Then the dose was gradually diminished. Some strychnia impression, however, was continued for five years, and now, after a period of eighteen years, there has been no recurrence of the disease.

Cerebral sclerosis is an indication for the use of alteratives. The iodides diminish the rapidity of its development and increase the activity of the bromides, and the iodides, as Brown-Séquard has taught us, can well be added in small doses to the bromide formula already mentioned. Another valuable drug against the sclerotic process in brain, liver, and kidneys is the chloride of gold and sodium rubbed up dry in capsule with pulverized resin guaiac; it can be given with advantage, alternating with the capsule of salol and phytolacca, already mentioned. This gold salt is not only antagonistic to the sclerotic process, but it is a mild cerebral stimulant; and the guaiac, like phytolacca, in some way corrects errors of metabolism. The great importance of a suitable occupation, of a reasonable amount of rest and of exercise, and a careful attention to hygiene must not be overlooked in the therapy of these cases.

Whatever plan of treatment we may determine upon, and the four indications that I have specified may be met in different ways by each of us, the treatment, to be effective, must be continued for a space of, at least, five years. Much of the therapeutic confusion that prevails in this disease results from too early reporting of cases as cured: a surgeon operates to-day, the patient having frequent convulsions; no convulsions occur for a month or two; the case is reported as a cure from some surgical operation; and the same is true of the various lines of drug treatment; but no epileptic can be regarded as cured until there has been at least five years' intermission in the epileptic manifestations.

DIETARY IN EPILEPSY.*

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THE dietary of epilepsy is more important than its drug treatment. In general practice it is still often left unspecified. Even public clinics for nervous diseases leave the dietary largely in the hands of the patient, aside from an injunction not to eat too much meat. The diet is not usually adhered to because the details of its preparation are not given to guide the patient. If such a loose plan of dietetics is adhered to foodstuffs become monotonous and often indigestible in consequence. For many years the author has followed a plan of giving epileptic patients a cook book, extracts from which were presented to the Society. Patients themselves have often aided in modifying and suggesting receipts. Necessity played as much a rôle in this new innovation as has been the case in the diabetic dietary. The author hopes that practical departments in dietetics in medical schools

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will some day aid much here as well as in all diseases where a dietary plays such an important rôle in proper treatment.

The salt poor dietary in the treatment of epilepsy is an established aid in the bromide treatment of epilepsy. The author has used it constantly in epileptic treatment for the past five years. It is one of the most signal advances in the bromide treatment that has appeared since the sedative has come into use. It does not upset the dietary nor interfere with the special receipt book, as patients quickly accustom themselves to taking sodium bromide in place of table salt. Many patients grow to like sodium bromide in preference to table salt. The author has, however, never obtained the rather miraculous results attributed to the salt poor diet by its French originators or their German followers. Statistics unfortunately have not settled the question, nor are they likely to do so, because of the many errors which creep into such studies.

Some form or preparation of bromide must accompany the epileptic dietary. The author believes that the bromides form an essential part in the successful treatment of all epilepsies. The bromides always lower the activity of the digestive glands, consequently combustion of foodstuffs is imperfect when these drugs are ingested. Often attention in the treatment of epilepsy is quite equally divided between combating the disease and warding off the harm of the remedies.

Bodily elimination should be looked after carefully; one must remember that in giving diuretics that bromides are eliminated chiefly by the kidneys, and that they are as readily excreted as the other solids. Only so much bromide as can be made to properly combine with the bodily tissues is effective in suppressing epileptic fits. Seizures are often induced by a too free catharsis and diuresis in patients previously doing well. The strategic point in the treatment of idiopathic epilepsy is to keep the bodily functions as free as possible from the distressing effects of the sedative treatment and yet maintain the proper sedation of the cerebral cortex. No dietetic regimen in obstinate cases of epilepsy is properly established or maintained for a long time without careful chemic and microscopic examinations of the stools. One must guard against starchy indigestion in forcing a too exclusive vegetable diet. Many patients over-eat starches and sugars to gain the repletion and stimulation of the former rich meat diet. In such, one finds intestinal fermentation, flatulence and gaseous eructations.

The author's general dietary for epileptics, together with some of the receipts for preparing it, are appended herewith:

Dietary.

Breakfast.

Fruit: California grapes, grape fruit, oranges (pulp and juice), peaches, apples, pears, plums.

Cereals: Oatmeal, Pettijohn, wheatena, cracked wheat, force, grape-nuts, rice, germea, cream of wheat.

Eggs: Soft-boiled, poached, scrambled or shirred, omelet.

Bread: Dry toast, milk toast, shredded wheat biscuit, graham bred, triscuit, gluten bread, zwieback, Huntley & Palmer's breakfast biscuit, Uneeda biscuit, French bread.

Liquids: Milk, buttermilk, peptonized milk, skimmed milk, kumyss, cereal coffee, Phillips' digestible cocoa, milk and vichy, milk and egg shake.

Dinner.

Soups: Clear, consommé, purée of vegetables, bouillon with egg, chicken and mutton broth, chestnut soup, oyster soup.

Fish or Meat: Fish (white, halibut, shad, brook trout, weak, red snapper), broiled, baked or boiled. Fowls should be broiled, roasted, boiled, or fricasseed. Meats (roast beef or beefsteak, roast lamb or lamb chops, boiled mutton).

Vegetables: Potatoes, parsnips, celery, tomatoes, spinach, asparagus, peas, string beans, salsify, lettuce, squash, macaroni, spaghetti, rice (prepared according to directions).

Desserts: Fresh fruits as given above, plain puddings, ice cream and water ices, cheese (cream, cottage, camembert).

Supper.

Breads, cereals, eggs, oysters (stew, creamed, steamed), creamed sweetbreads, stewed fruits (prunes, apples, peaches, apricots, rhubarb), liquids as for breakfast.

Avoid fried foods, rich gravies, pastry, cake, candies, hot bread, all forms of alcohol, tea, coffee, pork, lobster, ham, fruits with seeds.

Receipts.

Stewed fruits should be cooked until very tender and then slightly sweetened.

Oatmeal should be cooked three hours. All cereals should be cooked at least twenty minutes longer than the receipt.

Baked Omelet for One Person. — Beat the whites and yolks of two eggs together; add one teaspoonful of thick cream and a little salt; bake in a well-buttered earthern dish containing water, for about twenty minutes.

Cheese sauce for Baked Omelet. — One tablespoonful of butter, two tablespoonfuls of flour; put on stove and mix; add two cups boiling milk, and just before taking up add two tablespoonfuls Parmesan cheese.

Baked Omelet. — Add one spoonful of thick cream and a little salt to two well-beaten eggs; have one teaspoonful of butter in pan; when butter is hot, put in pan and let stand about five minutes, then finish in oven and turn over before serving.

Oyster Omelet. — Parboil one half dozen oysters in their own liquor, skim them out and cool them; then add them to the beaten eggs, either whole or minced. Cook the same as the plain omelet; thicken the liquor with butter and flour; season with salt, pepper and a little parsley; chop the oysters and add to the sauce; put a few spoonfuls in the center of the omelet before folding; when served, pour the remainder of the sauce around it.

Baked Omelet II. — Beat the whites and yolks of four eggs separately; add to the yolks a small cup of milk, a tablespoonful of cornstarch, a teaspoonful of baking powder, a little salt, and last the stiff-beaten whites of the eggs; bake in a well-buttered pie tin or plate about half an hour in a steady oven. Serve immediately.

Eggs in Cups. — Make little paper cups of buttered paper; put a small piece of butter in each and a little

chopped parsley, pepper and salt; put the cups on an iron over a good fire, and when the butter is melted break a fresh egg into each cup, on the top of each egg put a few bread crumbs; leave in oven until brown.

Breadstuffs. — Zwieback can be creamed like toast, and is often a pleasant substitute. The zwieback to be preferred is the round, thick biscuit kind without sweetening.

Shredded-wheat biscuit or triscuit can be heated in the oven and then broken up with the cereal, adding a little sugar and cream.

It can also be toasted and used for poached eggs or creamed oysters or chicken.

Liquids.

Milk and Vichy. — Take two thirds of a glass of rich milk and fill glass with vichy.

Milk and Egg Shake. — Beat an egg thoroughly and add a glass of rich milk and a little cracked ice and a teaspoonful of sugar; shake well and sift a little nutmeg over the top.

Milk and Orange Shake. — To the juice of an orange and a tablespoonful of sugar add half a glass of rich milk, cracked ice; shake well, then fill glass with vichy.

Milk and Lemon Shake. — The same receipt as above, using half a lemon instead of the orange and twice as much sugar.

Kumyss. — One quart of fresh milk, one even tablespoonful of sugar, one scant teaspoonful of salt, one-quarter of a compressed yeast cake. Mix all together and slightly warm, then bottle and put in a warm place for twelve hours, then place on the ice. Bottles should be kept on the side.

Soups. — Bouillon or any clear soup may be varied and strengthened by adding a beaten egg or the yolk of a hard-boiled egg, whole or grated.

Well-cooked chestnuts can be grated into a cream soup just before serving.

Fish or Meats.

Oysters can be creamed, steamed, or raw.

Sweetbreads. — Creamed sweetbreads can be eaten occasionally, and make a good supper dish.

Vegetables.

Parsnips and celery should be well cooked and then creamed.

Tomatoes should be eaten sparingly, and can be stewed or baked.

Potatoes can be mashed, creamed, boiled, or baked.

Spinach. — Cook the spinach thoroughly and then chop very fine; then season with soup stock or else cream it; in this way it is very digestible and generally liked.

Macaroni and Spaghetti. — Cook until tender, then cream and bake, and just before serving sprinkle grated cheese over top (Parmesan is the best).

Macaroni and Spaghetti. — Cook until tender, then add a little soup stock and sprinkle with browned bread crumbs or zwieback and serve with tomato sauce.

Desserts.

Caramel Custard. — To a cupful of granulated sugar add a tablespoonful of water and put in a small saucepan; stir until melted, then cook until it is a light brown color. Turn one half the caramel into a well-buttered mold which has straight sides and flat top, and then let it get cold. Into the remainder of the caramel turn a half cupful of hot water and let it stand on the side of the range until the caramel is dissolved. This is for the sauce.

Stir four yolks and two whole eggs with three tablespoonfuls of sugar, one-half saltspoonful of salt to a cream, but do not let it froth; add a pint of scalded milk and a half teaspoonful of vanilla. Strain this into the mold on the cold hardened caramel. Place the mold in a pan of hot water, and bake in a moderate oven until firm in center. The water in pan must not boil, and the oven should be so slow that it will take at least an hour to cook the custard. Unmold the custard when ready to serve. Serve the caramel sauce in another dish.

Apple Tapioca Pudding. — Cook pearl tapioca in a double boiler three hours; have ready four or five apples pared and cored in a baking dish, pour the hot tapioca over them, adding a little butter and sugar; then bake slowly until apples are tender. Serve with cream.

The same pudding can be made using peaches instead of apples.

List of Other Plain Puddings.

Rice pudding with milk, plain cornstarch, orange jelly, lemon jelly, junket, apple and bread crumb pudding, farina pudding.

NOTES ON THE PHOTOGRAPHY OF GROSS SPECIMENS.

BY MALCOLM DEAN MILLER, A.B., M.D., CAMBRIDGE.

PHOTOGRAPHY offers the best means of reproducing medical specimens, because it allows of the production of fine detail, and, provided reasonable care is taken, the lens will not lie so grossly as the artist is sometimes unavoidably led to do. The pencil is, of course, superior when semi-diagrammatic or diagrammatic representations are desired, but for most work a good photograph will give a more truthful tone-value picture that can be easily obtained with the pencil. It is the purpose of this article to point out how any physician with a little spare time and a suitable outfit can make his own prints for record or illustration.

The first requisite is a good anastigmat lens, since only such a lens will permit sufficiently sharp pictures to be made. The focal length is immaterial, provided that the camera has enough bellows extension to allow copying in same size, *i. e.*, twice the focal length. For all-around work, a 6-inch lens is very good for a 6½ by 8½ camera. The best type of box is the professional view camera with long bellows and both front and back focus operated by rack and pinion. A tripod, a large cylindrical glass jar, a velvet covered board to fit it, and double-coated plates are also necessary.

The board mentioned above should be of soft wood and be covered on one side with white and on the other with black velvet, so that either a white or black ground may be obtained at will. Arrange the specimen on the board and pin it firmly in place. Immerse the preparation in water, dilute alcohol, or other clear fluid in the jar and place on the floor in the direct light from a window. Arrange reflectors of white card to lighten the shadows, because it is important to have the lighting very soft. Now put the camera on the tripod and strap the legs firmly to a board laid across a table or stand and weight down with books. Extend the bellows to 12

inches for copying full-size with a 6-inch lens, and see that the specimen is also 12 inches from the lens. A sharp focus is very difficult to get, so it is a good plan to place on the specimen some metallic object with sharply stamped design or lettering and focus on it through a magnifier by means of the back rack and pinion. Now stop down to f/16 or f/22, and give a full exposure for the shadows.

Develop for four minutes in the following:

Sol. A. Pyrogallol, 1 oz.
Potass. metabisulphite, 2 dr.
Water to 16 oz.

Sol. B. Sodium sulphite anhydrous, 5 oz.
Sodium carbonate anhydrous, 2½ oz.
Water to 32 oz.

For immediate use take 2 dr. of A, 4 dr. of B and 12 oz. of water.

If the exposure is not correct, make another rather than attempt to modify the plate in development. Uniformity of results is best attained by fitting the exposure to the developer and using the same always at standard strength and at 65° F.

The negative should be clear and crisp, without sharp contrasts. Every tone of the specimen must be represented by a printable tone in the negative, and the effect as a whole should be soft. Much may be done to improve slightly defective pictures. If the shadow detail is foggy swab the plate immediately after fixing with a weak solution of potassium ferricyanide and wash well. This will clear the shadows or even remove some of the detail if allowed to act too long. The more common fault, however, is too great density in the lights with proper shadow detail. The lights must be cut down by some reducer which will act on them alone. Wash the plate for one hour after fixing and then immerse in the following until sufficiently reduced:

Cerium sulphate (ceric) merck, 1 oz.
Sulphuric acid (1.84), ½ oz.
Distilled water, 20 oz.

This solution keeps indefinitely and may be used repeatedly. Wash in running water afterwards for fifteen minutes.

Double-coated plates are necessary, because the plain plate will "plug" the highlights if enough exposure is given for the shadows, whereas the double coating allows one to time the fast outer film for the darks, and the slow inner film prevents halation or spreading of the lights, and preserves all the delicate gradation.

Prints should be made on glossy bromide or the glossy portrait grade of any of the popular developing papers. To prevent dark markings on the whites, a few drops per ounce of 10% potassium cyanide may be used as a restrainer in the paper developer. My own preference for this purpose is edinol:

Edinol, 15 gr.
Acetonsulphite (Bayer), 75 gr.
Sodium carbonate (dry), 113 gr.
Water, 3½ oz.
One drop 10% sol. potassium bromide.

White backgrounds generally need to be painted out on the negative with opaque, and black ones to be cleared with the ferricyanide-hypo mentioned above. This immersion method does away with all adventitious reflections and is really the only way that a satisfactory picture may be obtained.

Reports of Societies.

THE AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY.

ELEVENTH ANNUAL MEETING,
HELD AT BOSTON, MASS., JUNE 5, 6, AND 7, 1905.

(Concluded from No. 4, p. 120.)

SYMPTOMATOLOGY, DIAGNOSIS AND TREATMENT OF SIGMOID SINUS THROMBOSIS.

DR. JAMES F. MCKERNON of New York presented this paper. The speaker said that most of the typical cases of sigmoid sinus thrombosis coming under observation occurred secondary to mastoid involvement, or after a mastoid operation had been done, and presented certain definite symptoms which were fairly constant. These were; 1. Temperature; this he considered by far the most important symptom. 2. Chills were present in only a certain proportion of the cases seen. 3. The pulse corresponded to the temperature elevation. 4. The respirations were but little affected during the earlier stages of the thrombosis, becoming only slightly increased during the high temperature ranges. 5. In most of the cases that came under his observation the degree of pain was greater than that present with an ordinary mastoiditis, or that following the average post-operative case. The pain was usually referred to the side of the head and to the occipital region, and was very frequently localized in the region of the torcular. When pain was present in the neck, he thought it was usually due to the infected chain of lymphatic glands in that region, rather than to any obstruction in the vein. 6. Nausea and vomiting were usually present at some stage of the disease to a greater or less degree. 7. Intra-ocular; in about one third of the cases eye symptoms had been present; in the remaining two thirds the eyes were negative. 8. Vertigo was observed only when the meninges were involved. 9. Cerebration had been normal excepting in advanced cases.

Among the local symptoms, edema in the mastoid region and over and around the exit of the emissary and occipital veins was occasionally observed. In a fair proportion of the adult cases there was a marked stiffness of the muscles of the neck on the affected side, and in several instances a marked rigidity. Constipation was present in all of his cases, but only in the earlier stages of the disease. Among the general symptoms at the outset might be mentioned malaise, loss of appetite, a dry and heavily furred tongue, and a foul breath. The face usually wore an anxious and pallid look, the skin was dry and later presented the yellowish tinge indicative of sepsis. The hard cord-like swelling in the neck along the course of the internal jugular vein was a very infrequent sign, and the speaker said he had never been able to demonstrate it. Bacteriological examination of the discharge was of value only in that it gave the character of the infection. Another valuable aid in the diagnosis was the blood-count, not so much for determining whether a leucocytosis was present, but to ascertain the polynuclear percentage.

PATHOLOGIC FINDINGS OF INTRA-CRANIAL COMPLICATIONS OF MIDDLE EAR DISEASES.

DR. THOMAS J. HARRIS of New York read this paper. He called attention to the lack of material relating to this phase of the subject upon which to base reliable conclusions, and emphasized the importance of greater attention on the part of the surgeon in charge to the taking and preservation of the histories of his mastoid cases. Every special or general hospital with an ear service should have an ear registrar with whom the responsibility for the compilation and preservation of all records should rest. A card-catalogue index should be provided, with a cross-index according to disease. Greater zeal and earnestness should be exercised on the part of the surgeon in charge toward securing autopsies. In this way alone could the valuable material of the various institutions where otology was practiced be brought together for study and scientific research.

INTRA-CRANIAL COMPLICATIONS OF MIDDLE EAR SUPPURATION.

DR. EDWARD BRADFORD DENCH of New York opened the general discussion on this subject, and gave the following personal statistics: He had observed twelve cases of brain abscess (9 temporo-sphenoidal, 3 cerebellar); 38 cases of sinus thrombosis, in 13 of which the internal jugular was excised; 28 cases of epidural abscess, and four cases of meningitis. These statistics were fairly accurate, excepting those for meningitis. Under that heading, many cases escaped observation, as only those operated upon had been recorded. From these statistics it appeared that the relative frequency of the various intra-cranial lesions had been as follows: epidural abscess, 34.1%; brain abscess, 14.6%; sinus thrombosis, 46.3 %; general meningitis, 4.8%. Of the sinus thrombosis cases, the jugular was tied in 36.8%.

Regarding the mortality of the various conditions, of the 12 cases of brain abscess, 3 were cured and 9 died; of the 38 cases of sinus thrombosis, 32 were cured and 6 died. In 25 cases the internal jugular was not excised, and of these, 22 were cured and 3 died. In 13 cases the jugular was excised, and of these 10 recovered and 3 died. Of the 4 cases of meningitis operated on, 1 was cured and 3 died.

From these statistics it appeared that the two classes of cases that were attended by the highest mortality were brain abscess and diffuse meningitis, either of the purulent or serious variety. Epidural abscess and sinus thrombosis, including those cases where the jugular demanded excision, need not be looked upon as being of such a very serious character if the cases were operated upon early.

DR. CHARLES W. RICHARDSON of Washington, D. C., said there was one point in Dr. Jack's paper that was not sufficiently emphasized, and that was in regard to the aphasia that occurred in the left-sided cases. This aphasia was usually one of the earliest symptoms. The speaker said that in the treatment of the radical mastoid wound he did not look with favor upon the application of skin-grafts to the freshly exposed dura. He was also opposed to the treatment of the wound by the formation of a blood-clot, as that was another method by which infection could be readily carried into the cranial cavity.

TINNITUS AURIUM AND HALLUCINATIONS OF HEARING; OR, THE RELATION OF EAR DISEASE TO AUDITORY HALLUCINATIONS OF THE INSANE.

DR. W. SOHIER BRYANT of New York presented a paper on this subject.

SYMPOSIUM — DISEASES OF THE ACCESSORY SINUSES.

This symposium included a paper on "Frontal Sinusitis, Diagnosis, Treatment and Results," by Dr. C. G. Coakley of New York; "The Intra-Nasal Route in Operating upon the Nasal Accessory Sinuses," by Dr. Walter A. Wells of Washington, D. C.; "Further Experience with Radical Operations for Frontal Sinus Disease," by Dr. Wolff Freudenthal of New York; "Results of Operations by way of the Maxillary Route for Combined Disease of the Maxillary Antrum, the Ethmoid Labyrinth and the Sphenoid Sinus," by Dr. T. Passmore Berens of New York; "The External Operation for the Relief of Ethmoiditis," by Dr. Lewis A. Coffin of New York; "New Operation and Instruments for Draining the Frontal Sinus," by Dr. E. Fletcher Ingals of Chicago; "Two Successful Cases of Obliteration of the Frontal Sinus after Repeated Operations," by Dr. H. Holbrook Curtis of New York; and, "Report of a Case of Inflamed Dentigerous Cyst Simulating Abscess of the Antrum of Highmore, caused by an Odontoma," by Dr. William H. Haskin of New York.

In connection with this symposium, Dr. George L. Richards of Fall River, Mass., showed three cases of double frontal sinus disease and one of unilateral frontal sinus disease successfully treated by the obliteration method, and Dr. H. P. Mosher of Boston showed two cases of frontal sinus disease that had been operated upon by the open method, the one two weeks ago, the other four weeks ago. The cases were shown to illustrate the simple nature of the operation, and the appearance of the wound in the course of healing.

NOSE AND EAR COMPLICATIONS IN DIPHTHERIA, SCARLATINA AND MEASLES.

DR. JOHN H. MCCOLLOM of Boston in this paper emphasized the following points: 1. The frequency of otitis media in diphtheria, scarlet fever and measles. 2. The importance of early operation in mastoiditis occurring in these diseases. 3. The necessity of frequent examination of the ears, even when there were no symptoms referable to those organs. 4. Early incision of the drum-head in the acute infectious diseases as soon as there was any bulging. Dr. McCollom also suggested that if adenoids or tonsils were to be removed cultures should be taken from the nostril in every case before the operation was done, as it frequently happened that a child who had a profuse discharge from the nose, immediately after the removal of the adenoids or after ablation of the tonsils, developed a severe attack of diphtheria.

DR. GEORGE A. LELAND of Boston said that in the management of aural complications during the acute exanthemata, he strenuously insisted on not delaying examination for the secondary rise of temperature. The ears should be examined as a matter of routine from the onset of the disease.

DR. MCCOLLOM, in reply to a question, said he would not hesitate to advise operating on the mastoid, even in the height of an attack of one of the exanthemata. The danger of postponing the operation was greater than that entailed by the operation itself.

DR. WENDELL C. PHILLIPS of New York said that while he agreed, in the main, with the statements contained in Dr. McCollom's paper, he was inclined to believe that a bacteriological examination of the nasal secretions preliminary to an adenectomy was carrying precautions a little too far. Personally, it was his practice to have the child's temperature taken twelve or twenty-four hours prior to the operation, and if it was normal, to operate; otherwise, the operation was postponed.

SCARLATINAL OTITIS.

Dr. Frank B. Sprague of Providence, R. I. said that otitis media was the most frequent complication of scarlet fever, and, every thing considered, the most serious. Like the general infection, its severity varied with the epidemic, the climate and the seasons of the year. It was more common in the winter and spring months, and in the colder climates. Statistics showed that from three to nine per cent. of the cases of scarlet fever had ear complications, and in about fifty per cent. of these cases both ears were affected. Statistics further showed that of 5,613 deaf mutes in New York, 572, or nearly ten per cent., owed their condition to otitis complicating scarlet fever. In view of the serious consequences of this condition, Dr. Sprague emphasized the importance of its early recognition. We should not expect and wait for the ear to "break and run," as was so often done, for this was but little short of criminal negligence. As soon as there was the slightest indication of inflammation in the middle ear, the tympanic membrane should be incised, so as to preserve, if possible, the function of one of the most important organs of special sense.

THE INDICATIONS FOR OPERATING IN ACUTE MASTOIDITIS.

Dr. Philip D. Kerrison of New York said the indications for operating in acute mastoiditis might be summed up as follows: 1. Sudden cessation of the aural discharge, other symptoms persisting; deep seated pain in the mastoid region; marked sensitiveness to pressure upon the mastoid over an area extending well beyond the limits of the antrum. These symptoms, in the presence of a sudden and considerable rise in temperature, would justify an immediate operation. 2. In the absence of fever, the above symptoms, unless yielding promptly (within 24 to 48 hours) to abortive measures, would constitute a sufficient reason for operating upon the mastoid. 3. Marked tenderness over the antrum, persisting four or five days after free incision of Shrapnel's membrane, would point to necrotic changes within the antrum calling for operative intervention. 4. Marked variations in the quantity of pus discharged, its maximum flow being apparently too great to be explained by the tympanic lesion, its periods of diminution being coincident with the development of mastoid pain or tenderness, or both. Such a combination of symptoms constituted one of the most positive indications for opening the mastoid. 5. Mastoid tenderness having been present and having disappeared, a discharge from the tympanic vault which resisted all rational non-operative measures might, by reason of its persistence, justify the hypothesis of a necrotic area in the aditus or antrum. In such cases an operation was often the only means of saving the integrity of the organ and preventing serious impairment of function. 6. Evidences of mastoid involvement having been present, the development at any time during convalescence of symptoms of septic absorption would, in the absence of other concurrent disease, constitute a positive indication for immediate operation.

Dr. Francis R. Packard of Philadelphia thought that bulging of the wall of the canal was a particularly valuable symptom in cases where there was no discharge.

Dr. J. A. Stucky of Lexington, Ky., said that while sagging of the posterior superior wall of the canal might be pathognominic of mastoid involvement, the reverse was not necessarily true. We might have very extensive involvement of the mastoid cells with absolutely no abnormal indication of it in the posterior superior wall.

THE LARYNX IN TYPHOID FEVER.

Dr. Chevalier Jackson of Pittsburg, Pa., gave a brief résumé of his observations of the larynx made in 360 cases of typhoid fever. Three separate types of laryngeal involvement were noted, namely, acute catarrhal laryngitis, ulcerative laryngitis and perichondritis. Among the 360 cases examined, ulcerative laryngitis was observed in 68, of which eight required tracheotomy; there was perichondritis, with necrosis, in six, and without necrosis in eleven; there was ulcerative trachitis in nine. Eleven were associated with acute purulent otitis media. Four died. The most important factor in the etiology of the condition was the typhoid toxemia. As regarded treatment, intubation was useless and dangerous, but tracheotomy, if done early, was a life-saving measure. Ulceration in even the worst cases healed in ten days after tracheotomy and treatment through the tracheal wound. Tracheotomy should be done under local (Schleich solution) anesthesia.

ACUTE PURULENT OTITIS MEDIA COMPLICATING TYPHOID FEVER: REPORT OF A CASE, WITH AUTOPSY.

Dr. Ewing W. Day of Pittsburg, Pa., reported this case, in which the autopsy findings indicated that the otitis media was due to embolism or thrombosis of the tympanic and mastoid blood vessels.

THE SERUM TREATMENT OF HAY FEVER.

Dr. Hanau W. Loeb of St. Louis, Mo., read this paper, which embraced a brief review of Professor Dunbar's theory of the serum treatment of hay fever. Dr. Loeb's experiments began in the summer of 1903, with some toxin sent to him by Professor Dunbar. In typical cases of rose fever, or German hay fever, he derived more benefit from the serum treatment than in any other variety of cases. In every case there was relief after a few days from the symptoms of itching of the eyes, nose and palate, the sneezing and the nasal obstruction. Typical cases of American hay fever, with obstruction manifested only during the paroxysms, also showed improvement, the itching and sneezing being relieved in every case where the remedy was used under Dr. Loeb's direction. In some of those cases the remedy had failed to give relief until it was properly administered. There were other cases in which the condition of the nose interferred with the action of the serum, at times a considerable deformity or ridge or spur preventing the insufflation of the powder.

Dr. Loeb said his experience went to show that Dunbar's serum was effective against the distressing symptoms of hay fever; that the serum made by use of the toxins of the pollen of ragweed and goldenrod would be more effective in our American hay fever seemed likely both from analogy and from the cases reported; that there were more problems to be solved in connection with the influence of pollen in the production of hay fever; and, finally, that an important step forward had been made by Dunbar in this work.

REPORT OF SEVEN INTRA-CRANIAL OPERATIONS WITHIN A YEAR.

BY GEORGE F. COTT, M.D., BUFFALO, N. Y.

SYPHILIS OF THE NOSE AND ACCESSORY SINUSES.

Dr. James E. Logan of Kansas City, Mo., discussed this subject. He stated that primary nasal syphilis was of rare occurrence. Bulkley, from an analysis of 9,058 cases of extra-genital syphilis, found 95 primary lesions in the nose. The favorite site for the nasal chancre was upon the cartilaginous septum; some

had been found on the under surface of the alæ, and a few higher up in the vestibule. The finger-nail seemed to have been the most frequent means of conveying the infection, while infected instruments had been regarded as the offending agents in some instances. The secondary stage of nasal syphilis was hard to recognize, owing to the fact that the symptoms were few and indefinite during that period of the disease. The tertiary period was the particularly interesting stage of nasal syphilis. The lesions of that stage were extensive and ofttimes very destructive. The submucosa, which served as the periosteum of the bone, was primarily affected, followed by diffuse inflammatory processes developing in the bony framework. Dr. Logan believed that the bony structures were affected before changes in the mucous membrane were noticeable. Any part of the bony framework might be attacked by this disease, but the vomer and perpendicular plate of the ethmoid were especially predisposed to incipient necrosis. The next in point of frequency were the turbinates, usually first the inferior.

Primary syphilitic infection of the sinuses adjacent to the nose was scarcely likely to occur. Secondary manifestations in those regions were also rare, but tertiary bone necrosis was very common.

SYPHILITIC MANIFESTATIONS IN THE LARYNX AND TRACHEA.

DR. FRANCIS B. PACKARD of Philadelphia said that, as one would naturally expect, the manifestations of syphilis in the larynx and trachea were almost entirely confined to those of the secondary and tertiary periods of the disease, only a single case of chancre of the larynx being on record. Secondary syphilitic manifestations in the larynx were not uncommon, and might be broadly classified as (*a*) syphilitic laryngitis, and (*b*) the mucous patch. By far the most common tertiary manifestation of syphilis in the larynx was the gumma, and the ulcerative lesions and cicatricial contractions that followed in its train. Gumma of the larynx was generally of very late development, many years after the appearance of the initial sore. Its most usual location was the epiglottis, although frequently found on the vocal cords. It usually appeared with considerable suddenness, giving rise to a good deal of pain and interference with phonation. Probably the most familiar picture presented to laryngologists in syphilis of the larynx was that made up of the adhesions, contractions and distortions resulting from the cicatrization of deep syphilitic ulcerations. Syphilis of the trachea must be regarded as a very rare condition; no case in which the initial lesion of syphilis occurred in the trachea had been recorded, although mucous patches had been reported in that location.

REPORT OF A CASE OF ABSCESS IN THE TEMPORO-SPHENOIDAL LOBE OF THE BRAIN FOLLOWING AN ACUTE OTITIS MEDIA; OPERATION; RECOVERY.

DR. THOMAS H. HALSTED of Syracuse, N. Y., reported this case, which was that of a boy of eleven years. There was comparatively slight earache during the first nine days of the otitis media. There was unusual bulging of the drum-head, and complete relief of the pain followed its incision. The discharge ceased at the end of four days, and the drum-head healed rapidly. From that time on there was almost no complaint regarding the ear or head, but there was marked anorexia, listlessness, and change in disposition. There was an absence of definite symptoms pointing to a brain complication until vomiting, dizziness and a slow pulse occurred ten days after incision of the drum membrane. During this period headache was conspicuously absent, excepting on one occasion. There were no mastoid symptoms at any time. The blood count, six days before the first operation, showed a marked leucocytosis, and on the day of the operation this was very decided. For twenty-four hours after the first exploratory operation there seemed to be a marked relief of all symptoms, which was attributed by the parents to the vomiting of a long round worm, and by the physicians to the relief from pressure afforded by exposing the dura and allowing the escape of an appreciable quantity of serum. Thirty-six hours from the time of that operation, however, the boy had a sudden convulsion, with marked lowering of pulse, pupillary changes, vomiting and beginning stupor. This indicated that the diseased brain area had escaped detection at the previous operation, and that probably a rupture into one of the ventricles had occurred. This latter supposition was apparently verified during the second operation by the escape of clear cerebro-spinal fluid, followed immediately by thick pus from the abscess cavity when this latter was reached. The success of the operation was greatly handicapped by the venous hemorrhage, first from the diploë and then from the sigmoid sinus, so that the patient almost died from hemorrhage on the table before the abscess was entered, and necessitating a venous saline infusion and saline enemas.

The patient's recovery was rapid and without incident. The operation had resulted in an extensive loss of bone, and a large area of the dura was exposed, but granulation and healing was rapid. The abscess, which was in the temporo-sphenoidal lobe, was about the size of an egg, and held at least two ounces of pus. The infection was due to the streptococcus. The mastoid was entirely free from involvement, the infection having probably reached the brain along the sheaths of the lymphatics or veins, passing through the tegmen-tympani.

ORBITAL AND MENINGEAL INFECTION FROM THE ETHMOID CELLS; REPORT OF A CASE; DEATH.

DR. JAMES F. MCCAW of Watertown, N. Y., reported this case, which was one of fatal meningitis resulting from nasal suppuration, and exemplified the danger in neglected cases of this character. The path of the infection in this case seemed to have been an unusual one, the pus making its way across the orbital cavity to the external angular process, and, finding an exit there, it formed a large subperiosteal collection. Traveling backwards, it entered the cranial cavity through the sphenoidal fissure, apparently remaining subperiosteal throughout. Dr. McCaw said that, although a fatal outcome in these cases was rare, it was nevertheless a possibility in every case of suppurative sinusitis.

THE SIGNIFICANCE OF EDEMA OF THE PHARYNX.

DR. JACOB E. SCHADLE of St. Paul, Minn., said the association of edema of the pharynx with acute nephritis was a new observation and deserved mention on account of its clinical importance. He reported such a case coming under his observation.

Recent Literature.

Appendicitis. — Its History, Anatomy, Clinical Etiology, Pathology, Symptomatology, Diagnosis, Prognosis, Treatment, Technique of Operation, Complications and Sequels. By JOHN B. DEAVER, M.D., Surgeon-in-Chief to the German Hospital, Philadelphia. Third

edition, thoroughly revised and enlarged. Containing 64 full-page plates, 8 of which are colored. Philadelphia: P. Blakiston's Son & Co. 1012 Walnut Street. 1905.

This is an admirable book which is beautifully illustrated, although not so elaborately as Kelly's book. The author introduces into the book his personality and one cannot fail to recognize the great experience that Dr. Deaver brings to the subject. The subject of appendicitis is in a way so new that up to the present time no book has been published on the subject which is distinctly authoritative.

This is the third edition of the book and it has increased in size. There have been added forty-two new plates and many of the illustrations in the earlier editions have been re-drawn. Perhaps we ask too much, but we hope that eventually Dr. Deaver will diminish the size of his book and make it more an individual piece of work than a collection of the literature of the subject.

Dr. Ashhurst has written the chapter on the History of Appendicitis, and Dr. A. O. J. Kelly has written the Pathology of Appendicitis. Dr. Deaver still recommends that the appendix should be removed as soon as the diagnosis is made, but is distinctly opposed to operations for the removal of the appendix unless the diagnosis is clear. It is interesting to see that Dr. Deaver, while recommending immediate operation in acute appendicitis, recognizes that the Ochsner treatment is distinctly advantageous in certain cases. He no longer advocates the saline purgatives. He recognizes that cases of general purulent peritonitis are better treated by "a form of treatment based upon the withdrawal of food by mouth, the substitution of nutrient enemas, and hypodermic stimulation." He recognizes the expediency of leaving the appendix in certain appendicular abscesses. Dr. Deaver does not recommend prolonged irrigation.

It is nearly time that the subject of appendicitis should be crystallized and that instead of information being given to the reader in an undigested form, it should be critically analyzed and simple deductions drawn. As it now appears, the book is a very judicious, practical guide to the diagnosis and treatment of appendicitis. The binding is excellent and the illustrations are good.

The Nose and Throat in Medical History. By JONATHAN WRIGHT, M.D. St. Louis: Lewis S. Matthews & Co.

The author of this book well deserves the gratitude of the medical profession. He has traced from the earliest records of history to the present time the advances and retrograde movements of medical science and recorded such details as apply to the nose and throat. From this material he has produced a book so well combined and so well written that it is both entertaining and instructive. The thoughtful reader must be impressed by the antiquity both of knowledge and of fashions in medicine, and may well wonder whether our modern practice does not still include much which we understand as little and treat as irrationally as did the Greeks and Romans. Favorite prescriptions, such as the ashes of a swallow or the dung of a white dog were copied for centuries in different parts of the world. Pliny as a result of study of oriental medicine found that a cold is checked if one will kiss the nostrils of a mule. Errors in etiology persisted through thousands of years; we still frequently find them among our patients, and, as the author says, future historians will probably smile at ours. On the other hand the advice of Hippocrates on the subject of treatment of a broken nose might well be taught to-day, and many of us have seen nasal polypi treated in a manner almost as crude as by his method. That great advance has been made in recent years is very certain, but it is not always easy to distinguish science from art. Laryngology is of very recent development, and much of it is hardly old enough to be considered history. The book is the result of a degree of scholarship and an amount of study and time which can not fail to arouse the greatest admiration.

An Introduction to Pharmacognosy. By SMITH ELY JELLIFFE, Ph.D., M.D., Professor of Pharmacognosy and Instructor in Materia Medica and Therapeutics in the Columbia University (College of Physicians and Surgeons), New York. Illustrated. Philadelphia, New York, London: W. B. Saunders & Co. 1904.

Dr. Jelliffe has rendered a distinct service in writing a book on the subject of pharmacognosy. Books on many subjects in medicine we have in abundance, but a readable consideration of this subject has not hitherto been offered in English. The attempt has been to deal with the special, individual, anatomical characters of various drugs with emphasis upon microscopic appearances. The arrangement of the subject matter and the illustrations are such as to be of immediate practical use to the student, and we have no doubt that many will now undertake to learn something of the source of origin of drugs who hitherto have passed over the subject as beyond the necessities of the ordinary physician. The book is admirably printed and adequately indexed. We commend it without reserve.

Uncooked Foods: How to Use Them. A Treatise on How to Get the Highest Form of Animal Energy from Food. With Recipes for Preparation, Healthful Combinations and Menus. By MR. and MRS. EUGENE CHRISTIAN. New York: The Health Culture Co. 1904.

The authors of this book give the results of their experience in restoring their health through diet. The book is prefaced by portraits of the writers and is marred by a sentimental presentation of the subject which detracts from its worth. As an expression of an individual experience it is no doubt of some value and may lead others to adopt its suggestions.

Multiple Personality: An Experimental Study into the Nature of Human Individuality. By BORIS SIDIS, M.A., Ph.D., and SIMON P. GOODHART, Ph.B., M.D. 8vo. pp. xii. 462, with 2 plates and 22 illustrations. New York: D. Appleton & Co. 1905.

Over one hundred and fifty pages of the volume before us are taken up with a detailed study of a single case — that of the Rev. Thomas Hanna — which has already become somewhat familiar in newspaper accounts. Mr. Hanna, as a result of a fall on the head, developed an amnesia of his past life, forgetting objects, space, time, language and signs; forgetting the significance of food and the manner of feeding; becoming unable to walk, grasp objects, or adjust himself to the perception of size, volume and distance. Much of this knowledge was regained with marvellous rapidity, but the essential facts bearing upon his previous personality remained absent for a long time. He could not be hypnotized, but finally, by various processes of mental stimulation, the original personal memories were temporarily recalled, and finally these recollections became permanent. The rest of the work consists in a study of the psychical processes supposed to be involved in the production of this peculiar condition and in a review of similar cases. The authors present a theory of dissociation of consciousness and the formation of multiple personality which is neither clear nor convincing and is based largely upon the work of Janet. The student of morbid psychology will find much of interest in the book, in spite of its diffuseness and lack of clear and logical presentation.

A Laboratory Guide in Elementary Bacteriology. By William Dodge Frost, Ph.D., Assistant Professor of Bacteriology, University of Wisconsin. Third revised edition. New York: The Macmillan Company. 1904.

This is admirably adapted for laboratory classes. Its object, in the words of the author, is "To give adequate directions for the performance of certain fundamental exercises in bacteriology." It is in no sense a substitute for the text-book of descriptive bacteriology. The explanatory notes are brief, but there are many references to standard works and the original sources. Over a hundred exercises are given. The latest and best bacteriological methods are to be found here clearly and tersely stated. The book is provided with blank charts on which the student may note the cultural and physiological characteristics of the bacteria studied.

Bacteria, Yeasts, and Molds in the Home. By H. W. Conn, Ph.D., Professor of Biology in Wesleyan University, Middletown, Conn. Boston, U. S. A., and London: Ginn & Co. The Atheneum Press.

As in his previous works, Professor Conn in this present volume treats of certain aspects of domestic science with singular charm. It is difficult to believe that any intelligent housewife could fail to find this account of the relation of micro-organisms to the every-day affairs of the household interesting and instructive. Although intended primarily for managers of homes, it contains much of value to physicians. For example, clear directions are given for preparing koumiss, pasteurizing milk, and the preparation and application of disinfectants.

Among other subjects treated are the decay of fruit; useful molds; mold diseases; yeasts in the household; the preservation of food; the use of preservatives; disease bacteria; prevention of spread of contagious diseases, with helpful suggestions. In the appendix, simple laboratory experiments are described.

Alling and Griffin's Diseases of the Eye and Ear. By ARTHUR N. ALLING, M.D., and OVIDUS ARTHUR GRIFFIN, B.S., M.D. Philadelphia and New York: Lea Brothers & Co. 1905.

This, the seventeenth volume of the Medical Epitome Series, is intended to aid students in preparing themselves for examinations and probably will answer very well the purpose for which it was intended, as the chapters which treat the various topics therein contained are so systematically handled as to permit of an easy comprehension of the subject without making undue demands upon the memory of the reader. The book contains 263 pages and 83 illustrations.

Refraction and How to Refract. By JAMES THORINGTON, A.M., M.D. Third edition. Philadelphia: P. Blakiston's Son & Co. 1904.

The appearance of this work in 1899 was followed by a second edition one year later which was so soon exhausted that it was republished in 1902. The demand for a third edition in 1904 is evidence of its popularity. The text of the present edition has been gone over very carefully, fifteen new illustrations have been added, together with description of several new instruments intended to give material aid in the estimation of refraction.

A Compend of the Diseases of the Eye and Refraction including Treatment and Surgery. By GEORGE M. GOULD, A.M., M.D., and WALTER L. PYLE, A.M., M.D. Third edition, revised and corrected, with one hundred and nine illustrations, some of which are in color. Philadelphia: P. Blakiston's Son & Co. 1904.

The united efforts of Drs. Gould and Pyle have as a result a compact, handy volume which compares very favorably with some of the more pretentious recently published textbooks. The modesty of the title is somewhat misleading, for the volume seems to contain not only the essentials but goes into detail with a thoroughness which surprises the reader that so much of value in ophthalmology can be contained within its two hundred and ninety-five pages. It is certainly a safe book in the hands of the inexperienced and will prove of value to the more skilful.

THE BOSTON

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THE YELLOW FEVER SITUATION.

FOR many years it has been a common occurrence for the cities of the Gulf States to declare a quarantine against Havana but this summer the tables have been turned. Yellow fever has appeared in New Orleans and Havana has declared the quarantine. When the United States took possession of Cuba after the war one of its first public enterprises was to clean up the island. The results are well known and, among other things, prove that energy and scientific sanitation, thoroughly carried out, can control yellow fever. The death-rate of Havana was formerly abnormally high. Sporadic cases of yellow fever were nearly always present and fatal epidemics were common. Under the rigid cleaning-up process to which General Wood subjected the city the death-rate began to fall immediately until it is now no greater than that of the average American city, while yellow fever was so thoroughly wiped out that for many months not a single case was reported. Never since that time has there been anything approaching an epidemic.

In addition to this splendid sanitary work equally brilliant scientific research into the causes of yellow fever was carried on at the same time. It was demonstrated conclusively that the disease was caused by a parasite which found its intermediary host in mosquitoes. It was further proved that the old theory that the disease was spread by infected clothing and merchandise was entirely false. It will be remembered that volunteers lived and slept in clothing worn by victims of the disease in order to prove this point.

It was by working on the mosquito theory that yellow fever was eradicated. The filth of the city was removed, pools were drained and petroleum was used freely on all standing water. In this way the breeding of mosquitoes was reduced to a minimum. Most important of all, however, was the immediate isolation and thorough screening of all fever patients to protect them from mosquitoes, and thus to prevent the further spread of the disease. As already stated, the results were so convincing that the mosquito theory was at once accepted by the medical profession at large. Strangely enough, this lesson which Cuba seems to have taught so plainly has somehow failed to instruct New Orleans. Apparently the city has continued to regard the disease as inevitable. Although it has had several epidemics which were costly in business as well as in lives, so far as can be learned, no means had been taken along the lines indicated above to prevent future epidemics. New Orleans still continued its surface drainage and its use of storage tanks for water, than which no better conditions for breeding mosquitoes were needed. All that was necessary to start an epidemic was the importation of a case of yellow fever, a danger to which it was constantly exposed. The case appeared and now from many different foci the disease is spreading. The first case occurred about July 13 and in two weeks 283 cases had been reported. Now that the epidemic is at hand the authorities have awakened and are using the most energetic measures. Following the example of Cuba, they have cleaned the city and adopted the screening of yellow-fever patients.

Although some of the local physicians have accepted the theory of the mosquito spread of the disease, it is evident that all have not done so, if the report is true that the physicians of the Marine Hospital Service have been ordered to enter upon a campaign of education among the doctors. The rigid quarantine which has been established by cities which formerly had intimate social and business relations with New Orleans, not only against people from the infected city but also against all forms of merchandise, shows that the people still cling to their old traditions and business still suffers. The amount of money which will be lost through this interruption of commerce would undoubtedly have more than sufficed to put New Orleans in the best sanitary condition.

It is a failing common to all American cities to put off doing such things as are apparently not pressing until some calamity occurs, when they display an energy which would have averted the crisis if exerted earlier. We may expect, however, that this time the lesson will be learned,

by New Orleans at least, and that she will not soon have another epidemic. It is to be hoped also that the laity will learn from the methods now being used that at last the cause of yellow fever is really known and that epidemics can be prevented without resorting to commercial isolation. The whole situation serves to emphasize the fact that preventive medicine deserves more recognition than we seem willing to accord it.

FILTRATION OF WATER AND TYPHOID FEVER.

PRESIDENT DARLINGTON, of the New York Health Department, has sent to Mayor McClellan an elaborate report in which he urges the establishment at as early a date as practicable of an adequate filtering plant for the city's water supply. In it he asserts that the water is largely responsible for a considerable percentage of the cases of typhoid fever, as well as of diarrheal diseases. However pure the sources of supply, decaying vegetable and animal matters must necessarily exert a deleterious influence and render the water unfit for drinking, particularly when the impurities are concentrated in small bulk, as occurs in case of a drought. The time has surely come, he says, when the proper conservation of the public health demands that filtered water only shall be served to communities. Filtration is no longer an experiment. A well-made sand filter will remove 99½% of the bacteria from the water, in addition to most of the organic and inorganic matters suspended in it.

To show that the water supply is responsible he points to cities and towns abroad and in this country, where, after the installation of filtration plants, the cases of typhoid have greatly decreased in number. In Europe the filtering of public water supplies has been in use for more than seventy-five years. In Germany this has now been made practically obligatory on cities by the Imperial Board of Health. In Berlin from 1843 to 1852 the number of typhoid cases was about one in every 1,500 of the population, while from 1891 to 1900, when the water was filtered, the rate decreased to less than 1 in 10,000 persons. A decrease as marked is shown in Magdeburg, Breslau, Hamburg, and Hanover. In Philadelphia the difference in typhoid cases between the filtered water district and the other districts of the city is nearly 100%. In Ithaca, N. Y., in 1903, 10% of the inhabitants contracted typhoid fever from drinking the unfiltered water of Ten Mile Creek. Concerning the difference made by the filtration plant, Prof. S. M. Chamont of the department of chemistry, Cornell University, reports: "Since the filtered water has been in the city mains we have not been able to find a single case of the disease which could be ascribed to the municipal supply, though there have been numerous cases of typhoid among those who still persist in using shallow wells."

In Dr. Darlington's opinion, the rapid growth of the city renders it probable that the day is not far distant when, especially with the possibilities of drought, it may at any time be necessary, even with the additional supply contemplated from the Ulster County water-sheds, to take water from the Upper Hudson. Such water, with its sewage contamination from large cities and towns, would be extremely dangerous to life and health unless it were filtered. He states that an adequate filtration plant could be constructed within two years, at a cost of about $17,000,000, and estimates the annual cost of operation at $900,000. These figures would provide for a plant capable of filtering both the present Croton supply and the additional 500,000,000 gallons of water a day which it is expected that the Esopus and Rondout water-sheds will furnish.

SIRIASIS.

THE burned child may safely be said to dread the fire, but his companions, unscathed, are certainly slow to profit by his example. Year after year, from scanning with consternation in early July the death roll of tetanus, we turn in later summer to the lists of the unfortunates paying their penalty to the conditions characteristic of this season. "Timely" suggestions must now be expected from various sources as to the best treatment for sunstroke, but how much more effective would it be if we could reach with our advice the unobservant minds of the predestined, the most important point being in failure to impress a probable victim with his impending danger and the best way to avoid it.

Diagnosis of the condition is easy if we are careful always to remember the essential and striking differences between heat exhaustion and heat-stroke, and to bear in mind that many mild cases of the former pass unrecogized. The pathology is simple if we accept the reasonable theory that heat exhaustion, with lowered temperature, represents a vaso-motor palsy due to paralysis of the controlling center in the medulla, while thermic fever is due to disturbance of the heat-regulating center and consequent

upset of the normal balance between heat production and dissipation. The treatment is obviously rational and symptomatic: in exhaustion with collapse and low temperature, internal and surface stimulation and warmth; in prostration with hyperpyrexia, prompt lowering of the temperature by cold baths, cold packs, rectal flushing, or actual rubbing of the body with ice, accompanied by careful observation of the heart's endurance and appropriate stimulation. Antipyretics cannot be substituted for hydrotherapeutic measures. Temperature should be recorded frequently and taken in the rectum.

In the matter of forewarning nature often does her best, and, in the shape of oppression or headache, dizziness, nausea, dryness of the skin, gives an inkling of the coming onset or suggests its likelihood because of ill health, or vitality lowered from one cause or another. Even to the laity such points might well seem obvious, but it is directly from the ranks of those thus warned that the victims generally are drawn. Is the community at large wise in the choice of its head-gear and apparel, does the great value of the sun-umbrella receive half the recognition by men that it should; do those in charge of large gatherings, like the Grand Army parade, where last year, in the broiling sun, hundreds of veterans in tight-fitting black hats stood sweltering for hours without shelter, properly recognize their responsibility?

The gospel of precaution must be more widely preached. Prevention as the panacea ought to show one of its strongest records under the rubric insolation.

PLAGUE ON THE ISTHMUS.

It is becoming more and more evident, as we surmised at the outset, that the sanitary conditions on the Isthmus of Panama are proving one of the greatest difficulties in the prosecution of the work. Yellow fever has been a more or less constant menace and has already resulted in the death of a number of valuable men. Now it is reported that considerable alarm is felt lest bubonic plague gain a foothold among those at work on the canal. Not only is there danger from the existence of the disease itself, but even more threatening is the likelihood of a panic which, however unreasonable, certainly cannot be regarded as unnatural. It has not been altogether easy for those in authority to procure the type of man they wished to go to the canal zone, and it is not to be supposed that the appearance of epidemic disease, however sporadic the cases may be, will tend to remove the difficulty.

On the supposition that plague is spread by rats, an order has been placed in this country for several thousand traps which will be distributed to those points where the rats have appeared. It is naturally a matter of importance likewise to prevent the passage of rats from the infected districts to this or other countries. Incinerators are also being sent for the destruction of refuse material.

No doubt those in authority will meet many and grave responsibilities in maintaining the standard of health which is desirable. The situation clearly offers a problem of the utmost difficulty, but we have no doubt that the conflict will ultimately result in favor of intelligence and modern sanitary methods. In the meantime, however, it behooves the government to supply every means possible for the prompt and efficient extermination of sources of infection. The opportunity is at least unusual of demonstrating what the past few years have accomplished in the way of prevention.

MEDICAL NOTES.

Dr. Doyen's Serum. — The committee appointed after the Surgical Congress held in Paris in January to investigate Dr. Doyen's alleged serum for the cure of cancer has reported adversely to his claims. Twenty-six patients were under observation for the purposes of the test and twenty of these were worse. It is also stated that the existence of the so-called Micrococcus neoformans could not be demonstrated.

Immigration. — Statistics for the last fiscal year ending in June show that upwards of one million immigrants came to the United States during the preceding twelve months. In 1893, which was the largest previous year, there were 875,046 immigrants. It is furthermore stated that more immigrants entered the United States during the past year than for the four years 1894, 1895, 1897, 1898. The remarkable increase of persons coming to this country is shown by the fact that in 1842 for the first time the immigration figures reached one hundred thousand. In the last eighty-six years the total number of immigrants in the country has been 22,932,905, of whom more came from Great Britain than from any other country, with Germany second. Of the immigrants entering the country this last year nearly 800,000 came through New York, the figures for Boston being 65,111 and for Baltimore 62,314.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, Aug 2, 1905, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 20, scarlatina 7, typhoid fever 24, measles 15, tuberculosis 54, smallpox 0.

BOSTON MORTALITY STATISTICS. — The total number of deaths reported to the Board of Health for the week ending Saturday, July 29, 1905, was 248, against 207 the corresponding week of last year, showing an increase of 41 deaths, and making the death-rate for the week 20.59. Of this number 142 were males and 106 were females; 241 were white and 7 colored; 162 were born in the United States, 83 in foreign countries, and 3 unknown; 46 were of American parentage, 173 of foreign parentage, and 29 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 11 cases and no deaths; scarlatina, 3 cases and no deaths; typhoid fever, 11 cases and 3 deaths; measles, 18 cases and no deaths; tuberculosis, 45 cases and 24 deaths; smallpox, no cases and no deaths. The deaths from pneumonia were 11, whooping cough 1, heart disease 18, bronchitis 1, and marasmus 10. There were 20 deaths from violent causes. The number of children who died under one year was 71; the number under five years, 96. The number of persons who died over sixty years of age was 52. The deaths in public institutions were 62.

There were no cases reported from cerebrospinal meningitis during the week.

MEETING OF THE MASSACHUSETTS ASSOCIATION OF BOARDS OF HEALTH. — The meeting of the Massachusetts Association of Boards of Health was held July 27 at Gallop's Island in Boston Harbor. The main paper was read by Prof. A. H. Kirkland, State Superintendent of Gypsy and Brown Tail Moth Work, who described the conditions regarding the pest now existing in this state. Among many other matters of practical importance he urged that it is unwise at the present time to attempt the destruction of the egg clusters of the moths since by this means many of the eggs are likely to escape and hatch out normally in the spring. At present spraying with an arsenical preparation and later cutting the nests from the trees are likely to prove more efficacious methods. Dr. Theobald Smith took part in the discussion and many questions were asked showing the great general interest which the moth pest has excited.

NEW YORK.

DEATHS FROM EFFECTS OF HEAT. — It is stated that during the recent term of hot weather, from July 9 to July 19, the number of deaths in New York City directly attributable to the effects of the heat amounted to 235.

DIFFICULTIES OF A TUBERCULOSIS SANATORIUM. — The Board of Health of Jersey City is zealous. Learning that the city of New York was about to establish a country tuberculosis sanatorium at Otisville, Orange County, to reach which by rail necessitates starting from Jersey City, one of the members at a recent meeting offered a resolution regulating the movements of the patients while *en route*. The resolution requires the railroad company transporting the patients to carry them across the Hudson in boats especially set apart for their use and to prohibit them from passing through the station rooms or riding in the trains run for general traffic. It is stated that the resolution would have been passed but for the fact that the board had not been officially notified that the New York authorities had purchased a farm at Otisville for the purpose named. Accordingly, the department's clerk was directed to communicate with the New York Board in regard to the matter.

GIFT TO SUMMER HOSPITAL FOR TUBERCULOSIS. — On July 28 President Roosevelt made a visit to the summer hospital for children suffering from tuberculosis of the bones and glands which is conducted at Coney Island by the New York Association for Improving the Condition of the Poor. He was accompanied by Mr. Cutting, the president of the Association, President Darlington of the Health Department, Dr. H. M. Biggs, and others, and before leaving dictated a statement commending the work carried on there. In it he related the following incident: "About three weeks ago Miss Laura Winnington, who had been private secretary to Dr. Lyman Abbott and had taken a great interest in the Fresh Air Fund, was dying of cancer in St. Luke's Hospital, New York. When she learned of the need of increased hospital facilities for the children at 'Sea Breeze Home' she wrote a letter to *The Outlook* setting forth the work and its needs. A certain gentleman whom I know to be a large giver to charities, but who never allows his name to appear, saw this letter and asked Jacob Riis to go to Sea Breeze and investigate and to report to him on the facts. Mr. Riis investigated and reported so strongly on the good being done, and the great need for additional facilities, that the man in question

subscribed $10,000 for enlarging the hospital, and pledged himself to give $1,000 annually for ten years for maintaining it. Another man subscribed $5,000. Mr. Riis at once sent word to Miss Winnington, telling what her article had accomplished, and it cheered her last three days. She died on Wednesday."

Obituary.

PROF. HERMANN NOTHNAGEL

Dr. Hermann Nothnagel, of Vienna, died on the night of July 6–7. On July 6, apparently in his usual health, he had been active in his customary employments and the following morning was found dead in bed. Arteriosclerosis appears to have been at the bottom of the condition which resulted in his sudden death.

Professor Nothnagel was the son of a physician and was born in the Province of Brandenburg, Sept. 28, 1841. Among the early teachers who had much influence on his development was Traube. Virchow was also one of his teachers, and, after leaving the Friedrich Wilhelm Institute, he became an assistant to Leyden, a position which he held for three years, from 1865 to 1868. He became Privat-docent in internal medicine at Königsburg in 1866. After serving for some years in the army and lecturing on medicine, he received the appointment, in 1872, of professor of medicine and pharmacology in Baden. From 1874 to 1882 he held the professorship of clinical medicine at Jena and since 1882 has been closely identified with the University of Vienna in the same capacity.

Professor Nothnagel's service to the community in which he lived extended far beyond the confines of his medical practice. He was a man of very wide knowledge outside of his profession and stood high in Vienna as a man as well as a physician. This was peculiarly attested by the fact that his funeral was very largely attended by the people of Vienna who had no immediate professional relations with him. As a teacher he quickly acquired fame, and many men now prominent in German medicine are numbered among his pupils. His literary work consisted of papers on various subjects in internal medicine, including much work of great value on the nervous system. The system of medicine nearing completion at the time of his death, and of which he was the editor, further attests his great industry and the wide range of his interests. Standing as he did at the very head of the department of medicine which he represented, he was naturally affiliated with many scientific societies. In his death the continent of Europe loses one of its most distinguished clinicians. Our contemporary, the *British Medical Journal*, summarizes his life in the following words:

"Professor Nothnagel was a living illustration of his own saying, that only a good man can be a good physician. His fine personality impressed every one who came within the range of his influence. He had a vast practice, and is reported to have said that he had felt the pulses of 800,000 persons. He was so little careful of gain that when patients from distant lands sought counsel of him he not seldom paid the expenses of their journey out of his own pocket. He was particularly happy when his skill could benefit the poor. A man of the widest learning in many subjects outside the professional sphere, of consummate diagnostic skill, and acknowledged as the foremost clinician in Germany, Nothnagel was better pleased to be the beloved physician than the oracle of science."

Miscellany.

EARLY SPECIALIZATION.

The degree to which specialization is carried in medicine, according to the *Medical Press* (*London*), is often the subject of caustic remark on the part of the older generation; but so far in this country it has been held that all practitioners of separate branches of medical work should — if one excludes dentists — pass through the same course of general medical study before beginning to concentrate their energies on any particular branch. It has been left to the Harvard Medical School to introduce some variation in this salutary rule. With the opening of the academic year on May 1 (October) an arrangement came into force by which students in their fourth year of study could make an unlimited choice of the subjects to which they would devote their attention, certain groups of subjects being suggested as presenting advantageous combinations under certain circumstances. Roughly, it would seem the aim of the promotors of the scheme was to train two separate classes of workers,— those who would become clinical practitioners, and those who would give themselves to scientific work in laboratories. We are glad to hear that the large bulk of the students determine to take up clinical training, the numbers of those who aimed at laboratory work being small. It is always a misfortune when any choice between clinical and pathological work takes place, for that physician who is not a fair pathologist is no physician, and that pathologist who is not a physician is, at the best, an incomplete pathologist. To import the distinction between medicine and pathology into the students' curriculum is early to foster a distinction which can never be anything but regrettable, and it may be trusted that many of the Harvard students who chose medicine will, eventually, from force of circumstances or taste, find their way to the laboratories in future life. They will, at least, have a better appreciation of the significance of the problems they are called on to solve than if they have specialized in pathology before being thoroughly *au fait* with the manifestations of disease in the wards.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JULY 22, 1905.

CITIES.	Population Estimated, 1904.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diphtheria and croup.	Diarrheal Diseases.	Cerebro-spinal Meningitis.
New York . .	3,908,644	2,119	1,073	44.59	4.86	1.22	32.32	.94
Chicago . . .	1,990,750	627	245	40.33	5.58	.95	23.91	—
Philadelphia	1,467,988	—	—	—	—	—	—	—
St. Louis . .	633,606	—	—	—	—	—	—	—
Baltimore . .	542,329	281	143	42.69	4.37	.35	32.73	—
Cleveland . .	444,251	—	—	—	—	—	—	—
Buffalo . . .	400,645	—	—	—	—	—	—	—
Pittsburg . .	362,403	—	—	—	—	—	—	—
Cincinnati . .	338,377	—	—	—	—	—	—	—
Milwaukee .	335,990	—	—	—	—	—	—	—
Washington .	300,776	—	—	—	—	—	—	—
Providence .	196,744	70	29	45.76	1.43	2.86	31.46	—
Boston . . .	617,980	239	91	32.21	5.44	.83	21.34	—
Worcester . .	136,925	44	20	18.17	—	—	18.17	—
Fall River . .	119,349	68	49	73.73	3.03	—	65.14	—
Lowell . . .	104,402	57	37	52.63	5.26	—	40.34	—
Cambridge . .	100,998	28	14	35.71	7.14	—	32.13	—
Lynn	73,875	16	5	18.75	6.25	—	12.50	6.25
Lawrence . . .	72,848	39	31	66.67	—	—	66.67	—
Springfield .	72,030	24	13	28.57	—	—	23.00	—
Somerville . .	70,413	17	8	35.29	11.76	—	23.52	—
New Bedford	68,863	44	28	52.25	2.27	—	47.71	—
Holyoke . . .	50,538	14	8	28.57	—	—	21.42	—
Brockton . .	46,601	12	6	25.00	—	—	—	—
Haverhill . .	39,510	—	—	—	—	—	—	—
Newton . . .	39,061	13	4	7.70	7.70	—	7.70	—
Salem	37,305	27	13	33.33	—	—	33.33	—
Malden . . .	37,188	9	4	11.11	11.11	—	11.11	—
Chelsea . . .	35,498	14	3	14.28	—	—	—	—
Pitchburg . .	32,335	13	5	23.10	—	—	—	—
Taunton . . .	34,577	20	10	40.00	5.00	—	20.00	—
Everett . . .	30,309	8	4	12.50	—	—	—	—
North Adams	29,201	6	—	—	—	—	—	—
Gloucester .	26,798	—	—	—	—	—	—	—
Quincy . . .	26,121	8	5	37.50	—	—	37.50	—
Waltham . .	25,795	4	1	25.00	—	—	25.00	—
Brookline . .	25,578	2	1	50.00	—	—	50.00	—
Pittsfield . .	22,870	—	—	—	—	—	—	—
Chicopee . .	21,956	14	11	42.85	—	—	42.85	—
Medford . . .	21,692	7	—	—	14.30	—	—	—
Northampton	20,314	6	2	—	—	—	—	—
Beverly . . .	15,807	1	—	—	—	—	—	—
Clinton . . .	15,711	6	4	33.33	—	—	33.33	—
Leominster .	15,694	—	—	—	—	—	—	—
Newburyport	14,745	2	1	50.00	—	—	—	50.00
Woburn . . .	14,261	4	—	—	—	—	—	—
Hyde Park . .	14,250	4	1	—	—	—	—	—
Adams	14,178	—	—	—	—	—	—	—
Attleboro . .	14,315	—	—	—	—	—	—	—
Marlboro . .	13,819	5	1	40.00	—	—	40.00	—
Melrose . . .	13,809	0	—	—	—	—	—	—
Westfield . .	13,771	5	—	20.00	—	—	—	—
Milford . . .	13,609	—	—	—	—	—	—	—
Revere . . .	13,809	5	1	20.00	—	—	—	20.00
Framingham	13,974	—	—	—	—	—	—	—
Peabody . .	13,406	—	—	—	—	—	—	—
Gardner . . .	12,334	—	—	—	—	—	—	—
Weymouth . .	11,718	1	0	—	—	—	—	—
Southbridge .	11,575	—	—	—	—	—	—	—
Watertown .	11,350	5	2	—	—	—	—	—
Plymouth . .	11,139	—	—	—	—	—	—	—

Deaths reported, 3,890; under five years of age, 1,876; principal infectious diseases (smallpox, measles, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 1,639; acute lung diseases 179, consumption 304, scarlet fever 6, whooping cough 22, cerebrospinal meningitis 23, smallpox 1, erysipelas 6, puerperal fever 7, measles 19, typhoid fever 38, diarrheal diseases 1,176, diphtheria and croup 37.

From whooping cough, New York 15, Chicago 5, Providence 1, Fall River 1. From scarlet fever, New York 3, Chicago 2, Boston 1. From cerebrospinal meningitis, New York 20, Lynn, Newburyport and Revere 1 each. From erysipelas, New York 3, Chicago 2, Boston 1. From smallpox, Chicago 1. From typhoid fever, New York 26, Chicago 7, Baltimore 1, Boston 1, Lowell 2, Everett 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,609,377, for the week ending July 15, 1905, the death-rate was 12.9. Deaths reported 3,869; acute diseases of the respiratory organs (London) 48, whooping cough 70, diphtheria 26, measles 99, smallpox 0, scarlet fever 34.

The death-rate ranged from 3.7 in Hornsey to 23.1 in West Bromwich; London 11.7, West Ham 9.5, Brighton 12.7, Southampton 7.7, Plymouth 13.9, Bristol 14.3, Birmingham 14.0, Leicester 8.9, Nottingham 15.1, Birkenhead 15.7, Liverpool 17.0, Wigan 16.3, Bolton 12.0, Manchester 15.8, Salford 18.5, Halifax 12.5, Bradford 14.7, Leeds 13.0, Hull 12.5, Sheffield 14.7, Newcastle-on-Tyne 13.4, Cardiff 8.1, Rhondda 15.0, Merthyr Tydfil 18.4, Bournemouth 8.7, Tynemouth 14.6.

METEOROLOGICAL RECORD.

For the week ending July 22, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

DATE	Barometer.	Thermometer.			Relative humidity.			Direction of wind.				Velocity of wind.		Weather*		
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A.M.	8.00 P.M.	Daily mean.	8.00 A.M.		8.00 P.M.		8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	Rainfall in inches.
S. . 16	30.08	73	82	63	53	67	60	N	W	S	W	5	10	C.	O.	0
M. 17	29.86	80	90	69	88	67	78	S	W	N	E	12	3	R.	O.	T.
T. . 18	29.86	83	94	72	61	57	59	N	W	W		8	6	C.	F.	0
W. 19	29.77	84	94	73	61	63	62	W		W		6	10	O.	F.	.02
T. . 20	29.76	78	86	70	49	64	56	W		W		10	4	C.	O.	0
F. . 21	29.91	69	75	63	53	80	66	N	W	E		8	8	C.	O.	0
S. . 22	30.02	68	76	59	44	67	56	N		S	E	6	10	C.	F.	0
☞	29.89		85	58			62									.02

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Means for the week.

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING JULY 29, 1905.

W. E. G. HIGH, assistant surgeon. Detached from the Naval Training Station, San Francisco, Cal., and ordered home to wait orders.

C. G. SMITH, passed assistant surgeon. Commissioned passed assistant surgeon, with rank of lieutenant, from April 12, 1904.

E. M. SHIPP, surgeon. Orders of June 21 modified. Ordered to the Naval Hospital, New York, N. Y.

J. W. BACKUS, assistant surgeon. Detached from the "Southery," and ordered to the "Hancock."

V. DARNEY, acting assistant surgeon. Detached from the "Culgoa," and ordered to the "Southery."

SOCIETY NOTICE.

AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS. — The American Association of Obstetricians and Gynecologists will hold its eighteenth annual meeting at the Hotel Astor, Longacre Square, New York, Tuesday, Wednesday and Thursday, Sept. 19, 20 and 21, 1905. Dr. Robert T. Morris, 616 Madison Avenue, chairman, Dr. Samuel W. Bandler, 229 West 97th Street and Dr. James N. West, 71 West 49th Street constitute the local committee of arrangements, one or all of whom will gladly furnish information to members and guests upon application.

RECENT DEATHS.

JAMES HEDENBERG, M.D., M.M.S.S., died in Medford, July 25, 1905, aged seventy-four years.

DR. HERMAN JAMES SCHIFF of New York, died suddenly at Alexandria Bay on July 24. He was graduated from the College of Physicians and Surgeons, New York, in 1884, and afterwards served on the house staff of Mount Sinai Hospital. At the time of his death he was attending surgeon to St. Mark's Hospital.

DR. BENJAMIN EDGE of Jersey City, N. J., died on July 26. He had been in poor health for three years, and the immediate cause of death was gastritis. Dr. Edge was born in Jersey City, May 17, 1851, and received his early education at Clapham College, England. He returned to America to study medicine, and was graduated from Bellevue Hospital Medical College, New York, in 1879. In 1884 he was appointed a member of the New Jersey State Council of Charities and Corrections, and in 1901, of the State Reformatory Commission.

Original Articles.

NOTES ON X-LIGHT.

BY WILLIAM ROLLINS, M.D., BOSTON.

NOTE 199. ON DERMA-RAY TUBES AND PORTABLE NONRADIABLE CASES.

In using x-light in diagnosis, elaborate apparatus is required. In the earlier notes of the series some of the principles involved were stated and suitable apparatus described and illustrated. In using x-light in therapeutics the apparatus is much simpler. In using ultra-violet light, electrons, cathode and derma rays the apparatus is very simple. A certain amount of apparatus for these purposes was described in the notes later than Note 165 and the subject is here continued, after repeating several principles already advanced, which are still neglected.

A vacuum tube should be used in a nonradiable case which will allow no radiation to escape except the smallest beam which will cover the area to be examined, photographed or treated.

When the radiation is to be used in treating diseases near the surface the nonradiable case should be portable to allow the source of radiation to be brought to the patient instead of the patient to the source.

In using vacuum tube radiations in treating skin diseases x-rays are not suitable as they can produce profound effects upon the vital processes.

In treating skin diseases derma rays should be used instead of x-rays as they do not profoundly affect the internal organs.

In using vacuum tube radiations in treating diseases near the surface, focus tubes should not be used, for broad radiant area tubes are better and cheaper. Better, because by spreading the cathode stream over a large area the rays may be caused to arise from the glass wall of the vacuum tube almost in contact with the skin, thus shortening the exposure or allowing less powerful apparatus to be used. For example, if the source of the radiation is placed within 5 mm. of the skin instead of being at a distance of 20 cm., as is the custom now with focus tubes, the exposure requires to be only one sixteen-hundredth as long, because the therapeutic intensity varies approximately as the square of the distance. Often, the better way is to employ, a less intense radiation, for this permits of the use of portable and cheap apparatus. A two-inch open circuit transformer operated by two storage cells will excite a derma-ray tube. The total expense for such a transformer, battery, tube, tube box and electroscope with selective filters need not exceed seventy-five dollars. A more suitable electric generator is, however, a hinged Faraday ring of the type illustrated in earlier notes, as this can be run on any commercial circuit and requires no interrupter, always a source of inconvenience in any apparatus which is to be constantly used.

Derma-ray tubes of the type shown in Note 179 D can be sold for five dollars. In large quantity they could be made as cheaply as Edison incandescent lamp bulbs. The cost of installing and maintaining apparatus for the production of derma rays is much less than with Finsen rays and x-light, while for skin diseases derma rays are more useful. Dermatologists who prefer to send the few cases they consider suitable for treatment by Finsen rays or x-light to a radiation specialist can without serious expense employ derma rays for these cases. Derma rays are more efficient than Finsen's rays and safer than x-light, as they do not penetrate the body sufficiently to produce the profound effects of x-light which make its use in skin diseases unwise. A portable nonradiable case for derma-ray tubes was illustrated in Note 179 D, *Electrical Review*, 1903, and for derma rays and x-light tubes in Note 186. The latter type requires accuracy in the construction of the tubes. On this account another form is here illustrated. It is of the entirely inclosing type shown in Notes 94 and 179 D, therefore it allows of more irregularity in the tube. The case illustrated in Fig. 1 is of thin mahogany, heavily lined with an elastic, nonradiable paint coated with a fluorescent varnish, as recommended in Note 170 B. The case is provided with a handle which can be fastened either to the back or the side, and with nonradiable attachments for limiting the size of the beam of radiation allowed to escape. Some of these attachments have the simple lead diaphragm plates described and illustrated in the *International Dental Journal*, in 1896. One with a medium opening is shown in Fig. 2. This figure also illustrates a derma-ray tube of a different type from that described in Note 179 D. It contains the broad radiant area principle, but the two radiant areas are smaller. The derma rays arise from the two metal targets and not from the glass wall. With the same intensity of radiation, the exposure must be longer, as the source of energy is several times as far from the patient. The tube is intended for covering a larger area of the skin without change of position. In use the opening in the case is brought almost in contact with the skin.

The tube in Fig. 11 is of the general type shown in Note 179 D, but the impact of the cathode stream is on a sheet of aluminum, through which and the glass wall of the tube the radiations must pass. In this way some of the more easily absorbed rays are removed. It is difficult to insert large terminals into vacuum tubes. In this tube the aluminum is introduced as a roll, which is opened out within the tube and hooked to four small platinum wires. The plan is particularly useful in derma-ray tubes intended for treating broad areas.

Figs. 5, 6, 7, 8, 9, 10, illustrate derma-ray tubes and cases for treating very small areas of the eye, the ear, the mouth, or the throat. The nonradiable case in Fig. 10 is of the entirely inclosing type.

Where derma-ray tubes are to be inserted into the various openings of the body they should be made of fused quartz, ground thin over the area through which the radiations are to escape.

An apparatus for derma rays was presented to the Boston City Hospital in June, 1904. Though it has not been used it is probable any physician who was interested could see it if he wished to construct one. Derma rays have been used in Europe, and two prominent English electrotherapeutists, Wright and Reus, have spoken of their good effects. In Germany, Strebel has said the biochemical effects were superior to those of x-rays. He obtained favorable results in lupus and cutaneous epithelioma and predicts a future for them.

When the nonradiable case in Fig. 1 is used for an x-light tube, limiting cones of the type shown in Notes 156 and 186 should be employed, if the radiation is to be used in treating diseases below the surface. If the diseased tissues are at a considerable distance below the surface a portable nonradiable tube holder is not desirable because the distance of the source of radiation must be far from the body, as stated in Note 138 A, BOSTON MEDICAL AND SURGICAL JOURNAL, April 24, 1902, and in Note 179 D, *Electrical Review*, Dec. 12, 1903; otherwise, the skin will suffer ionic destruction before sufficient exposure has been given to the deeper tissues. Under these conditions limiting cones are too large and heavy for portable tube cases and should be attached to the nonportable type illustrated in Note 156, and their outer, not their inner, ends should be closed by selective filters as shown in Fig. 3 of the present note, to remove not only those primary radiations which are most absorbed by the skin, but also those secondary rays which were shown in Note 138, *Electrical Review*, June 6, 1903, to arise from the inner surfaces of the limiting attachments; because these secondary rays are absorbed by the skin and superficial tissues. Sheets of aluminum were found to make useful selective filters during the experiments on guinea pigs, and are easily attached to the limiting cones on the principle of box covers. This is shown in Fig. 3, where also the diaphragm plates are illustrated in connection with them. The principles of having the source of radiation at a long distance from the body in treating internal diseases and of using selective filters for straining out those radiations most absorbed by the skin, are of fundamental importance and deserve more attention than they have received. They were announced as the results of experiments on animals five years ago. Some physicians consider experiments on animals of small importance until repeated on man, and later announce them as new discoveries; ignoring the fact that the experimenter's object in using animals was to obtain information he could employ in medicine, and that he would not have published the results if they had not been found to apply to man.

It is always unwise to try new agents on man until after testing them on animals. The fact that x-light produced sterility in animals should have prevented physicians from exposing themselves and their patients to x-light, and the fact that men so exposed were sterile should have created no surprise. Sterility is a symptom of senility. Is it possible that the great number of rediscoveries made by those of us who are using x-light may be another symptom, showing that the brain is affected also, and that loss of memory results? Though it would be difficult to detect slight loss of memory in animals, the fact that signs of paralysis and sterility can be produced by exposing the brain without direct exposure of other parts of the body is interesting in this connection. That slight loss of memory is a symptom of senility is shown by a letter from Faraday to a friend. He wrote he had finished an investigation only to find the same discovery previously recorded in his note book. As it is probable that exposure to x-light affects the memory and diminishes that tide of energy necessary for original investigation, the precautions recommended in earlier notes should be taken.

NOTE 200. TREATING THE PROSTATE WITH X-LIGHT.

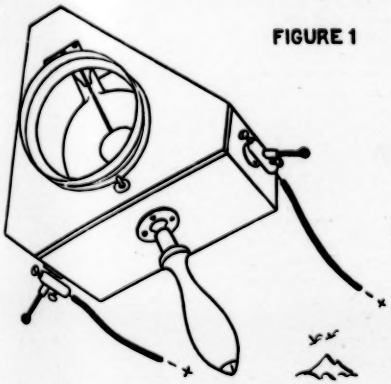
To study the effect of x-light on the prostate, a special attachment was made to a nonradiable tube holder to protect the testicles, as my experiments on guinea pigs had shown x-light could profoundly affect the vital processes. The tube holder with the attachment was illustrated in Note 156 and recommended for use in treating the prostate in Note 158, *Electrical Review*, June 6, 1903. One of these tube holders was sent to the Boston City Hospital in June, 1904. It can therefore be seen by any physician who might care to take the precautions shown to be necessary by experiments on animals which were described in former papers.

Fig. 1 is a copy of one of the illustrations of the tube holder taken from Note 156. Fig. 2 represents another useful form as it allows the source of x-light to be held in the hand and moved to bring the radiations in contact with any part of the patient. It has the selective filters recommended in earlier notes and shown to be theoretically and practically necessary in using radiations from vacuum tubes for treating diseases below the surface of the body. These filters strain out the radiations which would produce ionic destruction of the superficial tissues before the therapeutic effects had been obtained in the deeper tissues. The need of such filters was found so great in my experiments on guinea pigs that the procedure was later made into an x-light axiom, in this form, in the *Electrical Review* for Dec. 12, 1903, Note 179: "In using x-light, selective filters must be employed to strain out the undesirable radiations."

Description of the figures: The case C, Fig. 2, is of nonradiable material to prevent the escape of x-light except through the opening O, shown in section in Fig. 3. This opening is covered with a selective filter of aluminum, SF. There is a handle to the case to allow the source of radiation to be conveniently manipulated. The method of connecting the x-light tube with the electric generator is that shown in Figs. 1 and 2, Note 157, and in connection with portable nonradiable cases, in Note 179 D. The x-light tube is of the type invented by Roentgen for use with alter-

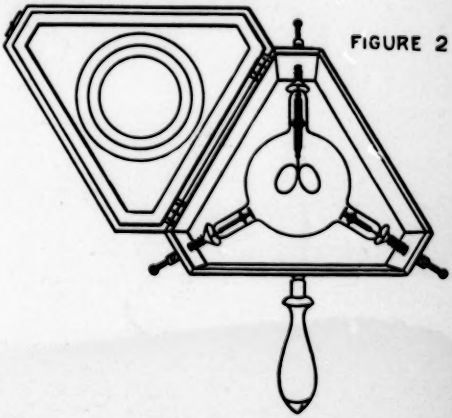
CUTS ILLUSTRATING NOTE 199.

FIGURE 1



Derma-ray tube in a portable nonradiable case.

FIGURE 2



Derma-ray tube in a portable nonradiable case, showing the method of attaching the tube to the generator. The tube regenerates by radio-activity.

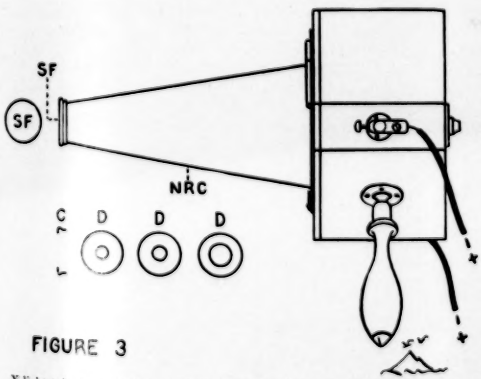
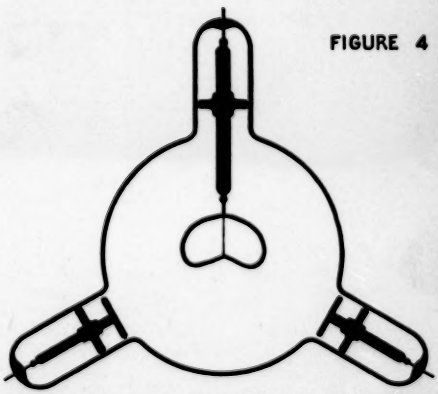


FIGURE 3

X-light tube in portable nonradiable case, provided with selective filters and diaphragm plates.

FIGURE 4



Derma-ray tube with two broad radiant areas and a radio-active regenerator.

FIGURE 5

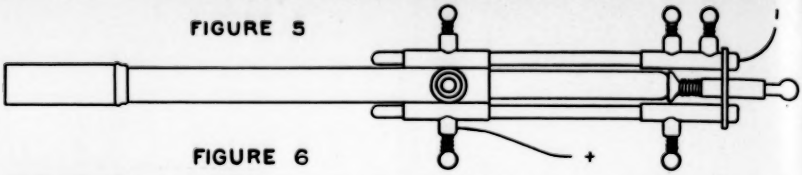


FIGURE 6

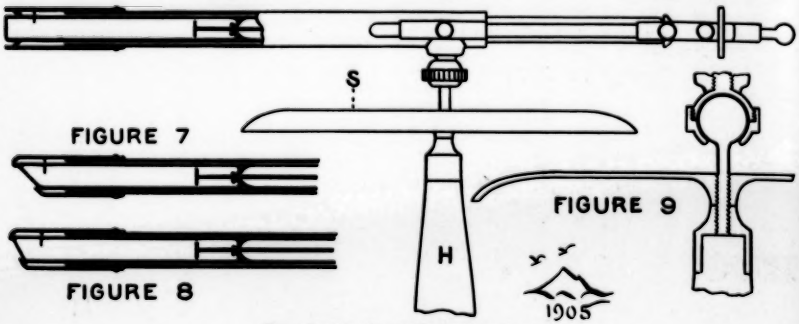


FIGURE 7

FIGURE 8

FIGURE 9

Derma-ray tubes for treating small areas.

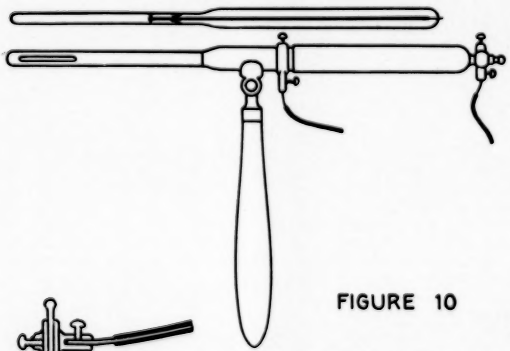


FIGURE 10

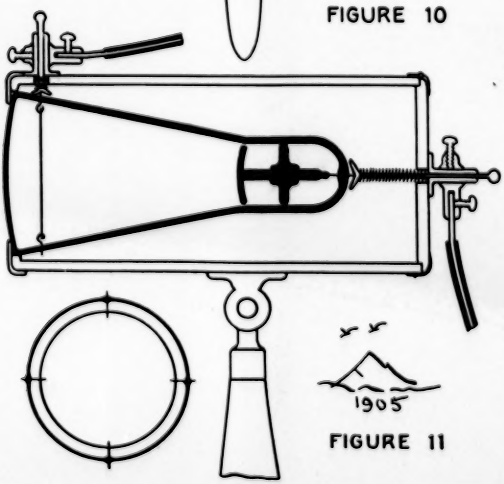


FIGURE 11

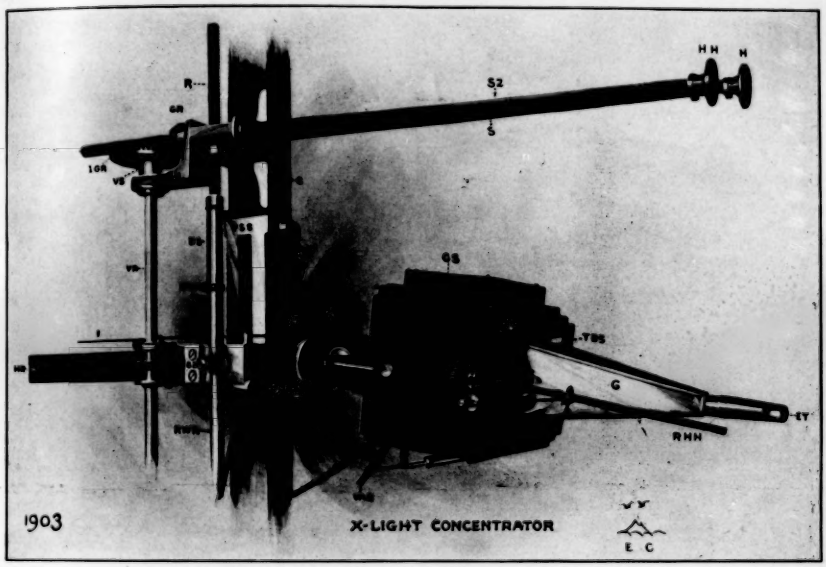
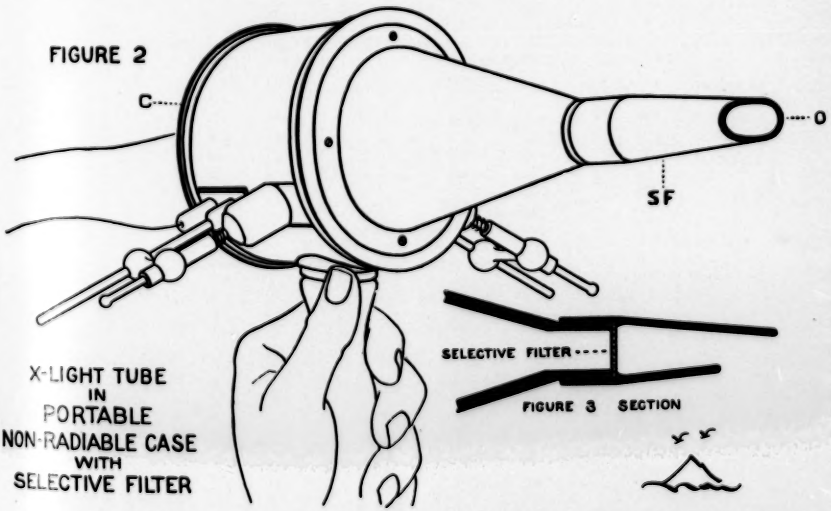

HH
H
R
S2
S
16A
VS
VS
VS
95
YBS
G
GY
RHH
1903
X-LIGHT CONCENTRATOR
E C

FIG. 1.


FIGURE 2
C
O
SF
X-LIGHT TUBE
IN
PORTABLE
NON-RADIABLE CASE
WITH
SELECTIVE FILTER
SELECTIVE FILTER
FIGURE 3 SECTION

nating currents.[1] It differs from the type in not having concave cathodes, in the direction in which the x-light is projected and in the relative positions of the terminals and the target. The two latter changes facilitate inclosing the tube in a nonradiable holder and connecting it with the electric generator, as well as getting the leading wires away from the patient. As the nonradiable tube holders shown in this note do not entirely inclose the tube, the exposed parts require to be covered with nonradiable material or the entire tube, except a small area for the escape of x-light, may be treated with an aqueous solution of esculine.

NOTE 201. WHY X-LIGHT AFFECTS THE BLOOD VESSELS.

In 1901, some of the results of a considerable number of experiments on guinea pigs with x-light were briefly reported in this JOURNAL. In Note 179 D, one of the conclusions reached was advanced as a theory of the action of x-light on animal tissues. Since that time the same theory has been advanced by Sir Oliver Lodge. In Note 180, *Electrical Review*, Jan. 23, 1904, the matter was more fully considered and the theory was used to explain the similar effects of radioactive substances. The theory stated x-light and radioactive substances produced ionization of the molecular complexes in the body. The previously known fact of the inability of these agents to affect a daguerreotype plate was mentioned in a later note, and their power to act on the same silver salt when it was mixed with an animal compound, gelatine, in the ordinary dry plate, were placed in contrast; the conclusion being reached that the greater effects on diseased than on normal tissues were due to the larger and less stable aggregations of molecules of the diseased tissues being more easily ionized than those of the normal ones in the same way that the larger molecular complexes of the gelatine dry plate were acted on when the smaller groups of the daguerreotype plate were not. Though in 1901, a pathologist could not be interested to study the guinea pigs injured during my experiments, a considerable number of observers have since examined tissues affected by x-light. The general opinion is the blood vessels are more seriously injured than some other tissues. The bearing of this on the ionization theory advanced in these notes is here considered. We know the fluids of the body are passing in and out through the walls of the blood vessels; therefore, some of the ions produced by the action of x-light and radioactive substances will be constantly carried by the currents through the cells of the walls of the vessels and their destructive action will there be marked. That ions produced by x-light and radioactive substances exist for some time after their production and can be carried to considerable distances is known to experimenters in physics, and details of a number of investigations may be found in the pages of *The Philosophical Magazine* during the last few years.

[1] Refer to Fig. 4, n. 199.

THREE CASES ILLUSTRATING THE PRACTICAL IMPORTANCE OF RECOGNIZING THE POST-EPILEPTIC STATE.

BY MORTON PRINCE, M.D.,
Physician for Diseases of the Nervous System, Boston City Hospital.

THOUGH temporary paralysis and various forms of mental delirium following epileptic fits are well recognized, I do not think that the possibility that the paralytic and mental condition may simulate gross lesion of the brain is as fully realized as the practical importance of the matter demands. The post-epileptic state may easily be mistaken for cerebral hemorrhage or tumor, and may seem to call for operative interference, as happened in two of the cases I am about to report.

Sometimes, especially in cerebral syphilis, it may be difficult to determine whether we are dealing with a post-epileptic paralysis, or with a form of syphilitic paralysis. Case II is an illustration of this condition.

OBSERVATION I. It is not surprising that this case, in the absence of a complete history, was mistaken for some sort of cerebral hemorrhage, and trephined.

A woman was found unconscious on the floor of her room. Seen by a neurologist and surgeon the question was thought to be between cortical and meningeal hemorrhage. Pupils were "equal, somewhat contracted and responded sluggishly to light." Every ten or fifteen minutes a clonic convulsion occurred involving both sides about equally. There was flaccid paralysis of the left extremity (extremities?) and the left knee jerk was plus. The right extremity (extremities?) spastic and knee jerk present. Babinski present on both sides.

There was no hematoma of the scalp, no bleeding from ears, nose or mouth, although there was an ecchymosis about the left eye. Operation was considered advisable.

On opening the dura there was *considerable serous discharge*, otherwise nothing remarkable was observed.

The next day it was noted the patient continued to have convulsions, but less frequently; that consciousness returned at intervals (between the attacks), and that she moved the left extremities *nearly as well as the right*. Transferred to the Boston City Hospital. While being taken from the ambulance to the ward the patient had a general convulsion of apparently the classical type. A few minutes later examination again showed evidence of hemiplegia. Both pupils were equal and reacted to light; slight obliteration of the left facial folds, slight drooping of the left corner of the mouth and drawing up of the right corner. Tongue protruded straight. Slight spasticity of right extremities, and moderate flacidity of left. Knee jerk; left slightly exaggerated over the right. Plantar reflex; left Babinski; right, "sluggish."

The patient was conscious and answered questions intelligently, but in a listless and dull manner.

Oct. 5, it is noticed that the patient's condition is much improved. Mind is much clearer. Examination made yesterday (four days after the attack) showed that the evidence of hemiplegia had entirely disappeared. One convulsion since Oct. 1. Patient states that she has been subject to "fainting spells" ever since she was a small child. On Oct. 13, six days later, it is noted that the patient has had one or two fits each day since last note. At other times perfectly rational No hemiplegia, which was evident on admission. About one week later (Oct. 21), in the interim being well, the

patient became wildly delirious, talking loudly and attempting to get out of bed; required restraint.

The records do not state the conditions under which this delirium developed, but presumably it followed a convulsion, for it is noted: "Last convulsion yesterday, frothing at the mouth, jaw rigid. Face and body turned to left and then general clonic convulsion, lasting about three minutes. Patient drowsy for some time afterwards."

Oct. 25, I saw the case in consultation and by careful inquiry obtained: First a history of long-standing epilepsy, the attacks being of the grand mal type; second, an account of what was in all probability a convulsion shortly before being found unconscious on the floor of her room. That is to say, the patient gave an account of symptoms similar in all respects to those which always usher in an attack, followed by loss of consciousness.

Physical examination showed no asymmetry, no alteration of the reflexes, no increased myotatic irritability, no muscular weakness, or any of these changes which follow organic hemiplegia even when transient.

In view of the fact that the patient was subject to fits, that she testified that she had had the symptoms which always begin a fit shortly before being found unconscious, that opening the skull showed no hemorrhage, that the hemiplegia nearly completely disappeared on the second day to reappear after a convulsion, and finally disappeared completely and rapidly at some time within four days of the original attack (perhaps earlier), and that after disappearance of the hemiplegia there was no persistent physical sign of increased myotatic irritability such as is usually found following even slight and transient hemiplegias due to organic disease, the diagnosis of post-epileptic paralysis was made.

The patient was put on bromide. The convulsions ceased and three weeks later the patient was discharged "apparently perfectly well mentally," as stated in the record, and none the worse for the surgical treatment.

OBSERVATION II. A. B., painter, age thirty-five. Last October he was taken ill in the following way: He began to feel mentally dull, his memory became defective and he experienced a sensation of "buzzing" in his head. The "buzzing" was not continuous, but intermittent and took rather the form of a succession of attacks. (It may be here noted that this subjective symptom was identical with that which he now experiences from time to time and which will be described later.) This condition lasted about one week, during which time he became more and more dull although able to go about, and terminated in a series of convulsions which came on at night when he was in bed and lasted for five days and five nights. Each convulsion lasted from five to ten minutes and left both sides weak but especially the right. At this time he was seen by a neurologist who thought his condition might be due to a cerebral tumor and advised an exploratory operation. At this time, as shown by the record, he was semi-comatose and there was *marked paralysis of the whole right side*. There was no optic neuritis. He was put upon 5 gr. of iodide and 30 gr. of bromide three times a day. At the end *of three days the hemiplegia had disappeared* and the reflexes were normal. It still being thought a tumor might be present, an operation was performed, the bone being removed over the middle portion of the motor region on the left side. The dura was opened but nothing found though the brain was probed with the little finger for the purpose of sounding for a tumor, and the ventricle tapped with a director without obtaining fluid. Considerable laceration of the cortex resulted. By degrees he recovered from the operation and, syphilis being suspected, he was put upon iodide of potash. There have been no more convulsive attacks, but, what is significant in connection with the history of the prodromes preceding the week of convulsive seizures, he now has frequent attacks of "buzzing," which are without doubt attacks of auras or petit mal. His present condition is that of nearly complete paralysis of the right arm with slight paresis of the face and leg. Otherwise he seems quite well. He is able to walk about but his arm is useless and exhibits a moderate amount of contracture. The deep reflexes on the right side are extremely exaggerated including a marked jaw jerk and ankle clonus. There is no anesthesia; his mind is clear and intelligent. There are no occular palsies or implications, of the cerebral nerves such as are frequent in cerebral syphilis; there is no optic neuritis, no headache, dizziness, or nausea, and in fact, with the exception of the monoplegia (or hemiplegia), there is no evidence of tumor, cerebral syphilis, or other organic lesion of the nervous system.

The persistent paralysis seems to be unquestionably due to laceration of the brain occasioned by probing at the time of the operation, and which, according to the statement of the surgeon, to me was considerable.

He now gives the following history of his past life, which corroborates this view: *Fifteen years ago* he met with an accident by which, owing to the breaking of a rope on board ship, he fell striking his head on the deck. He was unconscious for at least ten days. Seven years later, *i. e.*, eight years ago, he had his first convulsion, in which he lost consciousness. He had no more convulsions until four years ago, when they reappeared and continued in frequency from one a month to three a week. The convulsion always began on the right side, sometimes the initial spasm being in the leg and sometimes in the arm. They were always preceded by the aura of a "buzzing" in the head already described. He met with a second accident Aug. 28, 1903, due to the falling of a stage on which he was standing while painting. The accident was not attended by any ill consequences.

In carefully reviewing this case, and in the light of the history now known, the evidence seems to be conclusive that the paralysis and other cerebral symptoms, for which he was operated upon, were really only post-epileptic phenomena and in the course of time would have spontaneously disappeared, if operation had not been undertaken. It is significant that the patient now recalls and states distinctly that, although he has no recollection of the few days preceding the operation when he was in a semicomatose condition, on the morning of the operation he began to return to himself and could use his right hand.

It seems impossible that there can be any tumor present in view of first: Failure to find any tumor in the arm center, and, second, entire absence of the general symptoms of tumor, and his progressive recovery. As to cerebral syphilis, there is, and has been, no evidence of any focal disease such as would cause monoplegia nor of any diffuse process in the brain or spinal cord.

It is an interesting fact that in this case, while there was an exquisite ankle clonus on the right, there was no Babinski.

Remarks: The pathology of post-epileptic paralysis is entirely unknown. It is generally ascribed to exhaustion of the motor centers, but this is purely speculative and has almost nothing in its support. The gush of serum on opening the dura in the first of the above cases suggests the hypothesis that the paralysis may be due to localized edema. Such a pathology would comport with the symptoms, but as yet lacks objective evidence.

Observation III. The following case, one of post-epileptic delirium (dämmer-zustand) simulating insanity, was admitted to the Boston City Hospital in the medical service. On entrance her condition is described in the records as "apparently one of dementia." No history at the time was obtainable, but shortly afterwards it was learned from her husband that she had been subject to convulsions as long as he had known her, that is, at least for nine years. The attacks occur every three or four weeks and come on suddenly without warning. The patient becomes suddenly unconscious, froths at the mouth, but does not bite the tongue; clonic followed by tonic spasms; head is thrown back and body arched. Rigidity then ceases and the patient awakes as if from sleep. An attack lasts from three to twenty minutes and is usually followed by headaches, but her mind becomes and remains clear.

Eighteen months ago an attack occurred more severe than usual; patient lost her recognition of time and place, became noisy and difficult to manage; sent to Long Island for a week, recovered in ten days.

The present illness began three days before admission to the hospital. She became noisy, talked foolishly, and failed to recognize her surroundings and the time, but not violent. The next day she became stupid and would not answer questions. In reply to every question she kept repeating, "Now I am going to tell you." The patient continued unable to recognize her surroundings, but the stupor and apathy changed to noisiness and she was brought to the Boston City Hospital. On entrance at first "wildly delirious," she later became "semi-unconscious," but responded to painful stimuli; she frequently repeated the stereoptyped phrase, "Now I will tell you." Physical examination was negative. Pupils were of medium size and reacted to light and accommodation.

On Jan. 20, 1904, three days after entrance, I saw the case in consultation with a view of determining whether she should be sent to an asylum. But it seemed to me that the case was plainly one of post-epileptic delirium. This diagnosis was easily made in the light of the history obtained, and was confirmed by the fact that the patient soon, if not suddenly, recovered her senses. When I saw her, while not absolutely clear in mind, and still somewhat confused, she was no longer delirious or demented. In the course of the next day she had a relapse, but this soon cleared up and in a few days the patient was mentally as well as before the attack. The details of the hospital records are incomplete, but it is highly probable that the relapse which occurred followed an epileptic attack, she having had several while in the hospital. After recovery, the patient gave a clear account of herself, stating that she had been subject for years to epileptic attacks, some of which were of the grand mal type, and some of petit mal. The present illness began with an attack which was followed by the above-described mental condition. It did not appear that, with the two exceptions noted, her attacks have been followed by mental delirium. In the hospital records the patient is described as being, after recovery, "very emotional."

This I think can hardly be described as entirely pathological or unreasonable, as the patient had always had an intense dread of becoming insane, and now recovering very rapidly her reason, the poor woman could not make those about her realize that she was not insane, and was in terror of being sent to an asylum.

REMARKS ON THE PRESENT STATUS OF SURGICAL TREATMENT OF HEPATIC CIRRHOSIS.

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In the *Berliner klinische Wochenschrift* for July 30, 1900, Talma made the following statement: "Insufficiency of the collateral circulation of the blood should be considered as the cause of ascites. The improvement or cure of the affection may result from a gradual development of a collateral circulation. I advise my colleagues, under these circumstances, to open up new avenues of derivation for the blood of the portal vein. I am intending to bring into as close relationship as possible the liver or the large paraumbilical venous system of the abdominal wall in each case coming under observation of atrophic cirrhosis with ascites without disturbances in the cellular function of the liver and I have not been deceived in my expectations." This announcement of the professor of Utrecht did not pass by unnoticed and surgery entered into a new field which had been indicated by medicine. Various operations were performed intended to increase the anastomosis between the portal vein and vena cava in order to drain the distended portal system. Direct cavo-portal anastomosis was proposed and realized, but the operation was far from producing the results hoped for.

For many years hypertension of the portal vein has been considered the cause of ascites and the theories upheld explaining this would be too numerous to mention, but they were pleasing from their very simplicity. The portal vein being obstructed above naturally was thought to become dilated even in its finest branches and from this fact allowed serum to pass through its walls which gives rise to the ascitic fluid. An experimental demonstration of this process was even attempted by Beau as far back as 1851, while Frerichs out of a total of twenty-eight cases of adhesive pylephlebitis observed ascites in twenty-five and in the three other cases he noted abundant gastro-intestinal hemorrhage.

To these mechanical ascites arising from exit of the blood serum from the vessel, inflammatory ascites was opposed. Their manner of appearing, their great ease in reproduction and their composition rendered them very different from inflammatory ascites resulting from peritonitis. Hoppe-Seyler attentively examined the composition of the fluid of ascites arising during

cirrhosis. He noted that the amount of albumen was notably smaller as compared with the proportion found in the liquid of ascites arising in chronic peritonitis, and even in the classical treatises of to-day the mechanical theory is still quite frequently taught.

Although the experimental demonstration by ligature of the portal vein does not give rise to the production of ascites on account of the serious troubles rapidly arising in the lower limbs, the demonstration has been made of the production of edema by ligature of the vena cava after section of the sciatic nerve. This opinion is no longer unanimous at the present time and as we dip deeper into pathology the causes of ascites become much less simple in appearance. In the first place, there is an atrophic cirrhosis without ascites and a number of interesting cases have been recorded. Autopsies have also shown beyond a doubt that with an equal amount of intra-hepatic sclerosis ascites may be present or absent and that the development of the collateral circulation can not sufficiently explain this fact from the mechanical theory Hanot studied a number of cases of atrophic cirrhosis by confronting the symptoms with the lesion, and it appeared to him that in this particular case the amount of pathologic change indicated that the disease had reached that degree where it frequently is manifested by ascites. It consequently remains to discover why ascites was wanting, and this was a problem which Hanot was unable to solve. Dieulafoy has recorded a case in which the portal radicles in the stomach, intestine, and mesentery were the seat of a pronounced pylephlebitis and he questioned if the ascites met with in cirrhosis might not also be due to lesions directly involving the mesenteric and peritoneal origins of the portal vein. It would appear that Potain incriminated the action of cold from which resulted a reflex vaso-constriction, and Leuzmann has particularly insisted upon the weakened cardiac action, and explains those cases where ascites develops late in the process or does not occur at all to this cause. Siredey believes that the splanchnic nerves may also have considerable influence over the genesis of ascites as well as its cure. But an objection immediately comes to one's mind, namely, why does not the portal vein, having its origin in the digestive tract more so than in the peritoneum, when it is the seat of hypertension more frequently cause serious diarrhea instead of peritoneal fluid? Letulle has met with a case where the abdominal cavity was divided into two compartments, one comprising the disgestive tract and the other the liver. Now this patient died during a cirrhosis with ascites, the fluid collection being localized around the liver, while the peri-intestinal cavity was dry. Serous diarrhea has already been met with by other observers and it is most strange that they did not find any intraperitoneal fluid collection. There is at the same time portal hypertension and ascites, but from this coincidence it would not be logical to conclude that one was the cause and the other the effect, simply because such a coincidence cannot exist. It is more in conformity with our present knowledge of general pathology to attribute ascites to a peritoneal reaction, but when the nature of this reaction is considered the field of hypothesis is immediately entered upon. Alcoholic peritonitis of a chronic fibrous nature has been described and during its evolution may give rise to intraperitoneal fluid collections and in this liquid bits of fibrin are found in suspension, which demonstrate the inflammatory nature of the process. The large majority of authorities also attribute ascites to peritonitis in instances of the hypertrophic form of alcoholic cirrhosis. The part played by peritonitis in the production of ascites has been demonstrated by Rendu, who believes that inflammation of the serous membrane is far more potent in producing ascites than sclerotic constriction of the portal radicles.

In the chaos of badly defined chronic peritonites Delpeuch has described alcoholic peritonitis and perhaps in some cases this inflammatory process may be attributed to the presence of a few granulations of miliary tuberculosis. All the classical treatises speak of tuberculosis as a frequent complication of alcoholic cirrhosis, and in Kelynach's statistics published in 1902, out of a total of one hundred and thirty-one undeniable cases of alcoholic cirrhosis the coexistence of tuberculosis was found twenty-eight times, in other words 23 %. He points out the frequency with which tuberculous peritonitis is clinically met with in subjects of hepatic cirrhosis. It is especially in cases of large liver that tuberculosis and cirrhosis coexist and in some of them the former process appears to play the preponderant part. In the type of cirrhosis bearing the names of Hutinel and Sabourin the influence of alcohol is no longer invoked and is now considered as a tubercular lesion. In this type there is a fatty cirrhosis of the liver, but tuberculosis also gives rise to large livers with sclerosis. One cannot exclusively retain the conception of cirrhosis with a large liver and ascites as due to alcohol, and perhaps in a proportion of cases which still remain to be clinically defined one should add tuberculosis as a combination. The antagonism between tuberculosis and alcoholism can no longer be upheld, and Jousset, by employing uroscopy, comes to the conclusion that in many cases of hepatic cirrhosis which have been classified under the head of the hypertrophic alcoholic form are perhaps entirely of a tubercular nature. The peritoneal fluid and frequently the hepatic and splenic parenchyma are at times bacilliferous during the evolution of cirrhosis with large liver which is generally attributed to alcohol. Lejars also believes that in many instances one is dealing with an attenuated peritoneal tubercular process. However, tubercular infection cannot apply to all cases, and it would seem reasonable to admit that there is also some disturbance in the peritoneal cells arising from the influence of a defective circulation or from an intoxication due to hepatic in-

sufficiency. Under these circumstances certain conditions will arise which can be compared to those occurring in toxic edema of the subcutaneous cellular tissue. The poisoned cell excreting salts, and particularly sodium chloride, will give rise to an exosmosis of serous fluid because the presence of the salt in the peritoneum will cause isotonia to be defective.

Gilbert and Presles have demonstrated that peripheral edema of the lower limbs for example, which cannot be apparently explained by any other mechanism, is met with before ascites, and at any rate it is evident that portal hypertension cannot be invoked. A recovery from ascites in alcoholic cirrhosis is occasionally met with when the patient has been submitted to a diet from which all chloride of soda has been removed, and among other observers Olivier has reported his researches relative to the retention of the chlorides in ascites in five cases of atrophic cirrhosis, one case of syphilitic cirrhosis, and one of malarial hypertrophic cirrhosis. In all these cases the kidneys were normal, there was no diarrhea, in all the chlorides were retained the retention being distinctiy of hepatic origin. The ascitic fluid was found very rich in sodium chloride, containing about 7%, but all the salt ingested does not pass into the peritoneal cavity. For instance, in one case where 100 gm. were ingested, 58 gm. passed into the peritoneum, although the urinary elimination of the salt was not greatly diminished. It is consequently necessary to admit that the entrance of the salt does not occur with the same precision or regularity as in brightic edema.

If it is true that the first duty of the physician is to base his treatment on the teachings of pathology it must be confessed that it is somewhat embarrassing to conclude favorably, if the pathologic physiology of ascites be considered, as regards portal-cava anastomosis. If the condition of the liver plays the principal part it would appear rather dangerous to resort to surgical interference in a subject already intoxicated and weakened. The results furnished by surgeons who have resorted to operative interference, both in cases of cirrhosis with a large or small liver, statistically show that the operator has not always made a distinction between the two forms.

Various procedures have been devised to increase the number of portal-cava anastomoses and omentopexy was one of the first. This may be performed in two ways, either by fixing the omentum to the peritoneum, or uniting it between the peritoneum and the muscles. Then we have omentopexy combined with peritoneal drainage, hepatopexy, splenopexy, intraparietal fixation of the spleen, cholecystopexy and cholecystostomy, and lastly direct portal-cava anastomosis first advised after experiments by Tansini and put in practice by Vidal.

Out of a total of 107 omentopexies Alexandre found a mortality of 32%; of 31 cirrhosis of the atrophic type he found a mortality of 41% and 45% of recoveries or improvements. Of 20 cases of hypertrophic cirrhosis the same authority found a mortality of 15%, and 70% of the cases resulted either in recovery or amelioration. Montrofit collected 224 instances of surgical interference and found a mortality of 40%, and he says that the cure from operation shows that everything depends upon the previous condition of the liver as far as a recurrence of the ascites is concerned. In point of fact, the same number of operations and recurrences are to be found, namely, about 12%, while complete recoveries amount to nearly 35%. Consequently it may be assumed that a radical cure may be obtained in 35% nearly quite as often as death occurs (40%), immediately in 20% or at a later date in 20%. All this simply means that there is one chance out of two if operation is undertaken, because an advanced atrophic cirrhosis, which is not submitted to surgical treatment, is to all intents and purposes incurable. However, the proportion of cures becomes a much greater reality if the cases of improvement are taken into consideration and what is certain is that the number of good results will increase markedly as soon as one will be able to operate under more favorable circumstances, with the general health of the patient in better shape. To sum up, one may say relative to the necessity of surgical interference that it only rests with the physician whether or not he wishes in the future to obtain successful surgical results. Schwartz has recorded four cases of operation with two deaths, one occurring immediately, the other in six days, while of the two patients who survived one was cured and the other had a recurrence. He, however, is a partisan of omentopexy. Four cases are also reported by Willems, who states that his results lead him to look with disfavor upon interference, because he lost one case, two of the patients had an immediate recurrence of the ascites and one was only slightly benefited by the operation. The same authority also makes the statement that the very optimistical statistics of Montrofit are not in accord with certain German statistics which show only ten favorable results out of 250 cases. Lejars had one death eight days after omentopexy, one, two months after, and in the third case there was an improvement, but in the latter he was unable to observe any evidences of collateral circulation in the abdominal walls. Malherbe out of 8 cases obtained 4 cures with excellent ultimate results, two post-operative deaths, 1 death occurring three months after the interference, while in the remaining case the result was unknown. Brunswich, having done ten omentopexies, states that the operative results were fortunate, but that therapeutically the result was *nil*. Of 7 cases occurring in my practice one patient died three days after the operation, while the remaining 6 were improved, 2 of them having no recurrence of the ascites eighteen months and twenty-two months respectively, while in the remaining 4 recurrence took place seven months after the operation in one, in a second thirteen months after the operation, while the third died from other causes nine months ofter operation without any recurrence

of the peritoneal collection and the fourth had to be tapped six weeks after the interference.

From all that has been said it would appear that omentopexy is looked on with general favor by surgeons, although the results obtained are very disparaging. This could hardly be otherwise when one takes into consideration that the affections are so different and where frequently ascites and some hepatic lesion have alone been diagnosticated and in the statistics published so far are to be found the atrophic and hypertrophic forms mixed together and from the pathogenic standpoint will be found the alcoholic, toxic, malarial and very probably tuberculous and syphilitic types.

Now, in the reported cases what do the cures signify? Are they merely operative cures or definite recoveries? I will not consider the unfortunate result obtained in Vidal's operation, in which total exclusion of the liver was practised and which would appear to any one possessed of common sense as incompatible with normal life. Numerous are the cases of cure of cirrhosis. Without speaking of hypertrophic cirrhosis, where proper care and diet are usually sufficient, atrophic cirrhosis is also susceptible of improvement and it is only necessary to run through the history of atrophic cirrhosis with ascites in order to see how physicians have continually believed that they had discovered the panacea for this disease. Without wishing to discuss the various treatments and operations for obtaining portal derivation, it has only been my intention to show that ascites attributed to atrophic cirrhosis has been cured and that perhaps fortunate outcomes obtained by medical treatment in the past are perhaps quite as numerous as surgical cures which have been published of late.

That omentopexy may cure portal hypertension is not at all doubtful, provided the peritoneum is healthy, and the old experiments of Ech and more recent ones relative to direct portal-cava anastomosis have shown with abundant evidence that ligature of the portal vein is always fatal in animals. They die from profuse intestinal hemorrhage, but without ascites, whether the ligature was placed above or below the anastomosis of the gastro-splenic vein. If, however, the omentum is in the first place fixed by sutures between the skin and the muscles of the abdominal wall and time is given for extensive adhesions to arise, ligation, either above or below the gastro-splenic vein, will be tolerated at least in a large number of cases. The animals do not die and a collateral abdominal circulation rapidly develops, while ascites does not occur. On the other hand, a number of observations lead one to the same conclusion and we may take for example the two cases reported by Vidal. The first was a forty-three-year old male, who had been treated medically for three months for ascites and who was suddenly taken with an hematemesis at the same time that a very dark-colored diarrhea made its appearance. This condition had lasted for more than a month, the patient was in extreme danger from the very marked degree of anemia, so that omentopexy was performed almost in extremis. Six weeks after the patient had already improved, the intestinal hemorrhages had not occurred, the mucous membranes were red and the anemic souffle had disappeared but the ascites had rapidly recurred. The second patient had had hypertrophic alcoholic cirrhosis for eight months and had been treated medically. There was ascites to which finally became added hematemesis occurring from time to time for seven weeks and finally the patient was operated upon by omentopexy. This was done in June and in October the hematemesis had not recurred, but fluid had again collected in the peritoneal cavity. These two cases are so distinctly in relation with experimental findings that it is quite useless to quote others, although it would not be at all difficult to do so.

Omentopexy lessens the disturbances resulting from hypertension of the portal vein and perhaps to a certain extent may prevent ascites, but indirectly so by correcting the bad effects of venous stasis on the peritoneum, by delaying chronic peritonitis, the changes both of a toxic and circulatory nature of the peritoneal endothelium, which is the cause of the ascites. It is especially applicable when disturbances of the urinary secretion occur, such as oliguria, opsiuria and phenomena of congestion arising in the abdominal viscera, particularly hypertrophy of the spleen, but it is especially efficacious in diarrhea and intestinal hemorrhages, hematemesis or melena, which may weaken and rapidly kill the patient. But in order that a fortunate result may be obtained it is essential that the peritoneum should be vivacious and susceptible of giving rise to extensive adhesions, so that a venous capillary neoformation can be created. If the serous membrane is already intoxicated or diseased it cannot realize what is expected of it and the collateral abdominal circulation will not result. Consequently, if any good is to be expected from omentopexy it should be performed at an early date in the course of the disease, because later on it can only be dangerous.

It has been shown in what has preceded that even after the most favorable statistics the operative mortality is high and in many cases which have been called a cure have in reality died not long after. The dangers from the anesthetic and the operation are not the only ones, because hepatic exclusion is to be always feared and in cases of cirrhosis the patients usually die from hepatic insufficiency and from this cause alone. If the functions of the liver are imperfect immunity against the intestinal toxins no longer exists and the entire organism becomes poisoned, while an exchange of poor functionings is set up between the various organs of an intoxicated organism. In diseases of the liver the prognosis depends directly upon the condition of the hepatic cell and is it not to be feared that the portal deviation (which is already so considerable by the portal-cava tract when normal), if it is increased by surgical interference, may not accelerate toxic cachexia, or even indirectly producing

a more rapid evolution of the hepatic affection by a process easily understood?

Laparotomy has rendered some service, but it must be admitted that up to the present time it has been undertaken for exploration and also that only the fortunate cases have been recorded, so it is quite impossible to make a fairly exact statistic. Beside simple laparotomy a certain number of surgeons have combined the incision with drainage and in 1897 Wallace reported several cases of cirrhotic ascites permanently cured by this method. The cases are not yet, however, sufficiently numerous for one to draw any conclusion as to this method and whether or not the fortunate outcomes are due to a more prolonged and intense irritation from the drainage tube, resulting in the formation of adhesions, cannot be as yet decided. On the other hand, there have been a number of interesting cases of cure obtained after drainage of the biliary tract, especially in cases of infectious biliary cirrhosis. It has also been resorted to occasionally in venous cirrhosis with ascites. Whether or not the cure is due to the laparotomy or to the cholecystostomy is a question, but Delagenière is inclined towards the second interpretation and is a warm partisan of drainage of the gall bladder in cases of cirrhosis. In an infectious process of the liver it may progressively attenuate sclerous transformation.

Coming now to the practical point of treatment, let us suppose that a patient presents himself with an abdomen filled with fluid and from the history of the case a lesion of the liver is suspected. In the first place the urinary secretions should be examined carefully to ascertain if they are carrying off the necessary waste products and to discover the functional condition of the kidney the methylen blue test should be resorted to. The alimentary glycosuria should also be tested and the percentage of urea ascertained, after which the diagnosis may be made. If the fluid collection is free in the abdominal cavity without adhesions and dullness changes with the position given to the patient, along with an absence of any resistant masses and if palpation and percussion give uniform information, the diagnosis becomes clearer. But, in order to make a more complete examination of the abdominal organs, to palpate and percuss the liver, the fluid must be removed by the trocar. An analysis of the fluid, its cytology, physical examination of the liver, added to the general history of the case, and a complete and methodical general examination of the patient will generally be sufficient to make a diagnosis, and then, as I shall endeavor to show, each type of cirrhosis will have its corresponding surgical interference. If, however, the diagnosis is in the slightest degree doubtful, if the nature of the hepatic lesion or the condition of the peritoneum cannot be decided upon, I believe that exploratory laparotomy should be resorted to without delay. This is not dangerous in a patient who is as yet not cachectic and I might say not more so than puncture. The latter does not frighten the physician or his patient, but no direct exploration or visual examination of the abdominal cavity can be obtained, and the important point is to rapidly know with what condition of affairs one is dealing. Then again when ascites recurs once or several times after puncture has been practised, and if no contra-indications exist, an exploratory laparotomy is decidedly indicated. Very frequently one will discover a few discreet granulations on the peritoneum which are in reality the etiological factor of the ascites and at the same time an erroneous diagnosis will be corrected, while the patient has some chance of being cured. Exploratory laparotomy will continue to add to its successes in cases of unrecognized tuberculous or chronic peritonitis, which represent extra hepatic obstacles easily removable.

If an exact diagnosis of the cause and type of cirrhosis has been made, either by ordinary clinical means or during an exploratory laparotomy, the question then arises as to what method should be adopted. If one is dealing with a cardiac cirrhosis the hyperemic liver causes a total venous stasis and it becomes evident that under these circumstances there is no obstacle to the portal circulation and that the cause resides in the heart. A priori an omentopexy would give rise to a total failure and consequently, when the ascites has been recognized as being of cardiac origin, all surgical interference should be abstained from and the case becomes purely medical. In the malarial forms, Brunswick did not obtain any very favorable results from omentopexy, because, generally speaking, in these cases there is a general complex process of intoxication and hepatic insufficiency. The lesion of the liver is usually only secondary and no treatment can be directed against it, so that these cases should be treated with extreme prudence. Other interferences have been undertaken under these circumstances, such as splenectomy, which, although quite rational and proper, will not be discussed here as it does not come under the subject of this paper. As the chronic peritonitis may be considered the cause of the ascites in these cases, simple laparotomy, without drainage, should be preferred.

Syphilitic cirrhosis will hardly ever be surgically interfered with excepting from an erroneous diagnosis, but in some cases the condition is most obscure, and it is only by an exploratory incision that the real condition of affairs may be diagnosticated and thus lead to a proper medical treatment of the case. Tuberculous cirrhosis represents an interstitial hepatitis seated around the portal vein, and is difficult to distinguish from ordinary cirrhosis. Sometimes it takes on the characters of nodular parenchymatous hepatitis, while at others those of a fatty hypertrophic tuberculous cirrhosis. I would also recall to mind that recently a number of hypertrophic cirrhoses have been considered as tubercular in nature, which were formerly called alcoholic. However, the tuberculous nature of the cirrhosis will frequently only be recognized when other tuberculous lesions are present in some other

organ, particularly the lungs. The general condition of the patient will often contra-indicate surgical interference, but if the subject is sufficiently strong to resist Koch's bacillus and the tuberculous infection limited, especially if the peritoneum appears to react, a laparotomy will frequently result in the cure of a simple ascitic tuberculous peritonitis.

There now remain to be considered the so-called alcoholic cirrhoses, which certainly include many instances of toxic or infectious cirrhosis, and these are the cases which more directly interest surgery. The size of the liver results in the classification of cirrhosis with a large liver and that with a small liver. I am only referring here to venous cirrhosis with ascites. As the prognosis of the two conditions is different I have adopted this classification, which, although not scientific, is at least practical, but I would recall that some authorities are of the opinion that a hypertrophic cirrhosis may become an atrophic one and that others have demonstrated that among the atrophied lobes or lobules, others which are less involved and react better become hypertrophied and here one is dealing with a mixed cirrhosis. The hypertrophic form is susceptible of spontaneous cure and simply represents a less advanced lesion of the hepatic cell. At this stage of the process urobilin is still absent from the urine and the kidneys are in good functional condition and these cases have given the best surgical results. They may be cured by puncture, by incision or by omentopexy. Another reason why the prognosis is fairly good in this type of cirrhosis is that usually tuberculosis is the principal etiological factor and it thus becomes a curable disease. The proper intervention in my way of thinking is laparotomy without drainage in those cases where medical treatment and puncture have been unsuccessful. At the same time an exploratory operation is done, which results in the cure of a large majority of cases.

The same cannot be said of atrophic cirrhosis, because the prognosis is here far more serious. The small liver simply shows a very serious pathologic change of the hepatic cell and its decay is proven by the presence of urobilin in the urine. Before making a very serious prognosis it is well to confirm a necessarily doubtful diagnosis, and here again exploratory incision should be resorted to, and when the abdominal cavity is exposed the surgeon will act according to the various indications which may be present. If the peritoneum is healthy omentopexy may be done. This will prevent the production of anastomoses in the lower part of the esophagus, the anal region, and in the system of Retzius, which is certainly to be desired. If the patient is seen at a later date in the process when the peritoneum is markedly diseased omentopexy becomes at least a useless interference and should only be considered if portal hypertension menaces the patient's life. In this case it is an emergency operation, which can only put off the fatal outcome for a variable length of time.

If the general condition of the patient and the temperature chart lead to the supposition that an infection of the gall bladder has become added to the cirrhotic lesion of the liver omentopexy combined with drainage of the gall bladder may prove satisfactory.

PERONEAL RESECTION AS A MEANS OF CORRECTION IN RIGID VALGUS.*

BY CHARLES F. PAINTER, M. D., BOSTON,
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So much has been said and written in this community about flatfoot and its treatment that one ventures with considerable trepidation to mention the subject. A considerable experience in the management of this condition in an adult orthopedic clinic makes it seem worth while to call attention to three types of valgus which are not sufficiently well separated, even by those who treat this deformity in considerable numbers. Unless these three clinical types are fully recognized, treatment must of necessity be inadequate in a great many instances. I am not mentioning in this connection the simpler varieties of weak ankles, pronated feet, and simple non-spasmodic breaking down of the arches, and have no reference, of course, to the flattening of the anterior arch. In these the treatment is usually simple: Thomas soles, proper shoes, and low plates of many different patterns will relieve the majority. What I wish to do is indicate in what way the types may be recognized which cannot be treated in this manner.

The operative varieties of flatfoot, therefore, must be, and I believe in the great majority of instances can be, differentiated from the non-operative; in the second place, the operative cases may be classified on clinical grounds into three groups, and to these three groups three distinctly different procedures belong. No time need be taken in demonstrating that the operative cases should not be subjected to the non-operative treatment where it can be avoided, an error which is quite as great as is its reverse, provided we have the data at hand to make the clinical differentiation.

In the first division of the operative cases belong those feet where function is impaired through inability to allow inversion at the mediotarsal joint, this inability being due to intertarsal sensitiveness causing reflex spasmodic resistence. There is not usually much deformity in this class, and by deformity I mean either an abduction or a pronation of foot, or a combination of both. The arches are usually low, the foot shows signs of passive congestion, is often diffusely though slightly swollen, resists attempts at inversion while freely permitting dorsi- or plantar-flexion. Usually, however, by sitting down in front of the patient and gently but firmly tiring out the muscular spasm the foot can be brought into an extreme position of inversion with an amount of pain which the patient can readily stand. If complete restitution or over-correction is not

*From the Orthopedic Clinic of the Carney Hospital.

possible, either because of pain, or because of inability to overcome spasm, then an anesthetic should be administered, and the adhesions broken up, for it will generally be found that adhesions do exist. If they do not, and after profound anesthesia has completed muscular relaxation there is no resistance to force, one should be suspicious that the case belonged to another type of valgus, *viz.*, the one in which spasmodic contracture of the peroneals is responsible for the condition. In the unanesthetized patient where intertarsal spasm and adhesions are present there is usually no spasm of the peroneals produced by inversion of the foot.

The second divison may be designated as the peroneal class. In this the type of foot is usually higher arched, though it may not be. There is apt to be less disturbance of circulation and other evidence of functional disability. There is also commonly much more marked deformity, not necessarily abduction, but pronation, though usually both, and there is rarely, except in the long-standing cases, any lowering or undue prominence of the scaphoid. The characteristic feature, however, is brought out in attempts to manually correct the pronation and abduction. This attempt is usually not as painful as in the intertarsal adhesions, or at least not so immediately painful, but is accompanied by a tautness of the peroneals, which corresponds exactly with the amount of tension put upon the foot in inversion. Passive motion of the normal foot, even when carried to the extreme position of inversion, is accompanied by a scarcely appreciable increase in tension of the peroneals, felt above the external malcolus. Under ether the spasm of these cases disappears, and if there are no intertarsal adhesions then the case is probably one of pure peroneal spasm, and should be treated by resection of the peroneals and not by simple manipulation. It is possible, of course, to have both conditions present in one foot, in which case the best results will be obtained by adding peroneal resection to the forcible manipulation. This may be a condition of congenital shortening of the peroneals, the quantitative defect in the tendons manifesting itself in the form of muscular spasm.

The third condition includes the cases of bony deformity. These are, I believe, either congenitally flatfooted or the result of a relative shortening of the peroneal tendons, which has pulled the foot over into abduction. Certain cases of marked deformity have no peroneal contracture, while a few show decided evidence of this. The patients have lost all the elasticity of their tread. The arches are very low, the scaphoids rest nearly upon the floor, and there are usually calluses beneath these bones. Above the scaphoid and posterior to it is seen the prominence of the neck of the astragalus, and behind and above this is the prominence of the internal malcolus. The foot is markedly abducted, which abduction cannot be corrected, and yet there is no muscle spasm which accounts for the limitation. In this type occasionally, as has been pointed out, the peroneals are made taut by attempts at inversion of the foot. There is generally less swelling and congestion of the feet in this than in either of the other types, but the functional disability is as great or greater. The inner border of the foot is lengthened; manipulation and peroneal resection alone are of no avail in this condition and restitution of the arch and its greatest functional improvement is to be attained by the removal of the scaphoid. This shortens the inner border of the foot and removes the wedge which prevents the correction of abduction. Sometimes peroneal resection may also be required.

This latter operation has been practised by Dr. Robert Jones of Liverpool more than by any other surgeon, and the results in his hands in the proper class of cases have been most satisfactory. The technique of the operation is simple. The peroneals are exposed above the external malcolus. The peroneus longus is the first to come in view and is wholly tendinous in this situation; the peroneus brevis beneath it is both muscular and tendinous. From ¾ to 1 inch of both tendons are resected and the sheath destroyed. This latter is necessary to ensure the permanency of the result. The foot is then forcibly over-corrected after closing the wound and is retained in an over-corrected position by a plaster-of-paris bandage. It is left in this position for two or three weeks. At the end of this time the plasters may be removed and high Thomas heels applied, the patient being allowed the use of the feet.

Before this distinction between rigid valgus caused by intertarsal adhesions and the same condition produced by peroneal spasm was recognized the results of manipulation of the feet were very much less good than they are now, for the reason that the rigidity which was due to spasm of the peroneal tendons, though it entirely disappeared when the patient was under an anesthetic, immediately recurred as soon as the patient was out of the anesthesia or the feet were released from the retentive apparatus which was ordinarily applied at the time of the manipulation.

Another error which I think we have fallen into in the operative treatment of the rigid types of valgus is the attempt to correct by manipulation alone the extreme deformities which were the result of bony changes in the foot, which had been of long standing and which we should not entertain any reasonable expectation of being able to overcome by manual reposition. In this class a bone operation is required. The frequency with which one meets with this class is fortunately comparatively slight, but the results of bone operation gives extremely satisfactory results. In eight cases, representing twelve feet, the scaphoid has been excised with the result of decreasing the length of the inner border of the foot, permitting the arch to be raised and thus correcting abduction and restoring the foot to more nearly its normal anatomical condition.

The removal of the scaphoid must not be un-

dertaken with the idea that it is a simple procedure, for it is an extremely difficult undertaking to get from out its position, between the astragalus and the internal cuneiform, a bone of the shape of the scaphoid and having its great depth in a side-to-side diameter. The strong intertarsal ligaments which hold it in place are very difficult to sever, particularly on the far side, and there are no instruments devised especially for the purpose of getting at these fibrous bands. It is almost impossible to remove the bone intact. When it has been removed it is at once found that the great obstacle to inversion of the foot has been removed, and, by forceful manual manipulation, aided by the Thomas wrench, the foot can be brought to a much-improved position. Like the peroneal spasm cases, the foot should be put up in as extreme a position of inversion as it is possible to attain and held there in plaster but for a much longer time than is required in the peroneal cases. I think it is better to keep these patients at least six weeks in this position, then, by adjusting a moderately low flatfoot plate and gradually elevating this as the height of the arch can be improved the function of the foot will be found to be steadily bettered. This should be followed up by massage, exercises and local hydrotherapy to favor the improvement in tone of the muscles and make the patient, as soon as possible, independent of artificial supports.

Since following these precautions in the selection of patients suitable for operation among a large number of flatfeet coming to this clinic, the results of operative interference upon this kind of deformity have very materially improved over what they were before we recognized the existence of the types mentioned. Formerly, a very large number of our manipulative flatfoot cases relapsed. Now, a very small proportion show this tendency. We have practised peroneal resection in thirty instances and resection of the scaphoid in twelve. Sufficient time (two and three years respectively) has elapsed in the older cases to justify the conclusion that both operations in the proper instances are extremely satisfactory; in fact, are the only thoroughly satisfactory methods of treatment for these particularly intractable varieties of trouble with the foot.

I think the description of these deformities and the operative procedures employed, to which I have referred, have been sufficiently described in the above attempt at differentiation of types. An extended report of the individual cases upon which this short paper has been based would simply serve to encumber the text and they are, therefore, at this time omitted.

Medical Progress.

RECENT PROGRESS IN THORACIC DISEASES.

BY JOHN W. BARTOL, M.D., BOSTON.

ACTINOMYCES IN PULMONARY DISEASE.

THE clinical importance of the actinomyces or streptothrix group in pulmonary disease is emphasized in two recent papers, one by Warthin and Olney [1] the other by Stokes.[2] Both papers are largely given over to questions of classification of different species of the organism and to pathological considerations, but both by illustrative cases, personal and from the literature, call renewed attention to the fact that there are many species of this group which produce suppuration or necrotic pseudo-tubercles in man and various animals, thus indicating the great importance, in differential diagnosis of tuberculosis, of searching carefully for members of this group in suspicious cases where tubercle bacilli are not found.

THE CHEST IN PULMONARY TUBERCULOSIS.

Brown and Pope [3] agree that the view still generally held that the phthisical chest is flat needs modification, but as a result of their study of measurements taken in normal and tubercular individuals they are not willing to accept the conclusions of Woods and Hutchinson, reported in 1897 to 1903. They hold that even yet there is much to be done in the study of measurements and the estimation of the influences exerted by race, age, occupation, and altitude; but that as a general proposition, it may be granted that tuberculosis is more likely to be found associated with a chest which is sub-normal in its diameter and normal or super-normal in its length, although it cannot be claimed that such coincidence is a proven *propter hoc*. As a check on Hutchinson's figures, they fix the chest index (relations of anterior to transverse diameter) in health at 73, in the early stages of tuberculosis at 72, and in advanced stages at 76, indicating that his normal index is too low, and his tuberculosis index too high. It is probable that the progress of the disease tends to raise the index through changes in bulk of the lungs, but the index by itself does not appear to have any prognostic value.

PLEURISY AS A SIGN OF PERITONEAL INFECTION.

The danger of faulty diagnosis in cases where abdominal affections show symptoms pointing to the thorax or vice versa is well recognized; not so generally remembered, however, is the help which positive evidence of exudate in the pleural cavity may give in establishing the hidden existence of abdominal inflammation. Auerbach,[4] after giving a brief account of studies, statistical and anatomical, published in recent years, including the important work of Küttner showing the free communication by lymph channels between pleura and peritoneum in both directions and the complete isolation of the two halves of the diaphragm, reports five cases seen by himself within a short time of each other in which the existence of a pleurisy either serous or purulent was obviously indicative of a purulent condition (in most instances liver abscess) below the diaphragm.

MORTALITY OF PNEUMONIA IN HIGH ALTITUDES.

A contribution to the moot question as to whether pneumonia is a more dangerous disease

[1] Am. Journ. Med. Sci., October, 1904.
[2] Am. Journ. Med. Sci., November, 1904.
[3] Am. Journ. Med. Sci., October, 1904.
[4] Münch. Med. Wchr., March 7, 1905.

in high altitudes than in low, is made by Kieffer,[5] who reports the statistics from Fort Russell, Wyoming, situated 6,195 feet above sea level. These figures cover the entire history of the fort, for a period of thirty-eight years, and comprise 127 cases of pneumonia, with 20 deaths, a mortality of 15.74%. Discounting the fact that these cases occurred in healthy, vigorous men, in good hygienic surroundings and also that the figures are too small for positive deductions, the impression is still gained that the prevailing belief in an increased mortality in high altitudes is not justified by facts, as is already indicated by the studies of Hoagland and of Swan, and that here, as elsewhere, the determining factor is chiefly the virulence of the infection.

TRAUMA AS CAUSE OF AORTIC INSUFFICIENCY.

Sinnhuber[6] adds to present list of such cases three more, in which autopsy was lacking, but which, none the less, seem without much question further instances of the traumatic origin of serious valvular disability.

PERICARDITIS.

It is encouraging to conclude from the present frequency with which papers on inflammatory lesions of the pericardium appear that the profession is being rapidly awakened to the fact that in the past such affections have been more often overlooked than recognized. Recent contributions by Scott and Leconte, and Riesman,[7] while adding nothing new, are interesting in the presentation of cases and serve a useful end in keeping up the agitation.

OPEN DUCTUS BOTALLI.

All signs continue to fail in the diagnosis of congenital heart defects, and the difficulty of establishing any reliable table for distinguishing one form from another becomes more and more apparent. Arnheim[8] reports a case in which on basis of absent cyanosis, marked enlargement of the heart especially to right, a bonnet-shaped extension of the dulness to the left of the sternal border, a loud roaring systolic murmur often continuing into diastole, most intense in second and third space and transmitted to vessels of neck, second pulmonic inaudible, and a left radial pulse much stronger than right, be made diagnosis of open ductus Botalli with dilated pulmonary artery. At autopsy was found pulmonary stenosis, tricuspid insufficiency and aneurysmal dilatation of pulmonary artery, but ductus Botalli was closed and there was no septum defect whatever. The inexpediency of trusting to the dogmatic statements of the various investigators of congenital defects is brilliantly illustrated by the contradiction which this case offers to any one scheme of diagnosis.

DILATATION OF THE HEART.

The promptitude with which the heart muscle can dilate under stress of extraordinary demand and return again to normal limits is illustrated by Starck, who reports[9] the case of a student of athletic tastes and an active bicycle rider. While taking the prescribed course of duels at the University he found it necessary on two occasions to quit on account of distress in heart region. On the evening before the final fight his heart was normal, but during the duel next morning he was forced to stop in the second round with a pulse rate of 160 and severe cardiac pains. On examination within a short time the heart's dulness extended to left anterior axillary line, not increased to right, the rhythm was unequal and irregular, the tones were clear — by evening the outlines were nearly normal. Inasmuch as he had previously gone through physical exertions much greater than the duels without serious results, Starck emphasizes the importance of the nervous influences arising from the agitation caused by the great importance on collegiate standing which the duels have. He thinks that the psychical factor often has an important influence in causing acute dilatation.

Moritz[10] discourses on the difficulties in diagnosis and interpretation of heart dilatation — A differential between the purely physiological form (which may occur) and the lesser grades with pathological basis is very hard to establish, and a mere determination of the slight enlargements even with orthodiagraph is sometimes impossible. It may be postulated, however, that every considerable increase in heart volume, and every increase that does not return to normal or returns only gradually is to be considered pathological. It has been firmly established that pathological dilatation may result from a variety of causes, *i. e.*, valvular disease, infectious or toxic influences, and physical strain; but there are other important points to establish in regard to questions still unsettled; *e. g.*, the effect of exercise, alcohol, hot baths, narcotic and other medicaments; the orthodiagraph, which has already served to demonstrate interesting changes in heart volume during the Valsalva maneuvre, and in change of posture, offers the best method of studying these problems.

The relation of diphtheria to cardiac dilatation is discussed by Dietten[11] and a case of unusual dilatation of left auricle resulting from mitral stenosis is reported with comments by Muller.[12]

HEART RHYTHM.

In spite of the many observations and studies that have been made both in the laboratory and in clinical cases, the present knowledge of disturbed heart rhythm remains largely theoretical and based on experimental data which, to say the least, seems fairly open to the varying interpretations given by different observers. Papers on the subject are frequent, and must be kept track of by the interested student of such matters, but in order to fairly appraise the results original sources must be consulted. Contributions by Lommel, by Gerhardt, by Finkelnburg[13] treat

[5] Am. Med., March 4, 1905.
[6] Deut. Med. Wchr., No. 32, 1904.
[7] Am. Journ. Med. Sci., September, 1904.
[8] Berl. Klin. Wchr., Feb. 20, 1905.
[9] Münch. Med. Wchr., Feb. 14, 1905.
[10] Münch. Med. Wchr., April 11, 1905.
[11] Münch. Med. Wchr., April 11, 1905.
[12] Zeit. f. Klin. Med., B. 56, H. 5 and 6.
[13] Deut. Archiv. Klin. Med., B. 82, H. 5 and 6.

respectively of Occasional Doubling of Heart's Rate, Extra-Systole and Heart-block, while Fauconnet [14] writes of Bigeminal Pulse after Digitalis.

TESTING THE HEART'S FUNCTION.

Methods both simple and complicated now abound for testing the capacity of the heart. Amongst the former should be classed the maneuvre of Herz,[15] who directs the patient to flex the arm at the elbow very slowly for a given length of time, the pulse being counted before and after the exercise, and according to the effect on the rate certain conclusions are drawn which seem to have rather a limited application.

Kraus, on the other hand [16] contributes quite an elaborate paper which does not lend itself to summary, in which he reports the effect upon the heart's action, studied in many ways, of irritation of the sympathetic.

Reports of Societies.

AMERICAN MEDICAL ASSOCIATION.
SURGICAL SECTION.

PORTLAND, OREGON, JULY 11, 12 AND 13, 1905.
TUESDAY AFTERNOON.

THE chairman, DR. MAURICE H. RICHARDSON of Boston, delivered his address, which dealt very largely with the errors and mistakes occurring to surgeons under any and all circumstances and he strongly urged the advisability of young men spending considerable time studying under some good surgeons before branching out for themselves.

THE CURE OF INGUINAL HERNIA.

DR. HENRY O. MARCY of Boston, dealt with this subject under twelve headings: (1) History; (2) Anatomy; (3) Pathology; (4) Cause; (5) Cure; (6) Limitations of Operation; (7) Reconstruction of Inguinal Canal to its Normal Obliquity; (8) Methods of Suturing; (9) Suture Material; (10) Closure and Sealing of Wounds without Drainage; (11) Subsequent Care; (12) Results.

FIBROID GROWTHS OF THE ABDOMINAL WALL.

DR. CHARLES A. POWERS of Denver, referred to the frequency of the so-called dermoid tumors, and stated that they generally occur in women from twenty-five to thirty-five years of age, who have recently been pregnant, most often in the region of the right rectus muscle, below the navel. He detailed their etiology, form, size, pathology, development and course, together with their symptoms, diagnosis, management and the immediate and remote results of operation. Postoperative hernia and relapse of growth were referred to as well as a detailed description of the author's cases and a review of the literature.

DR. ROBERT F. WEIR of New York, mentioned having seen two similar cases on whom he operated, one of whom was well the last he heard of her, while the other died in the hospital after having twice recurred and being twice removed.

DR. RIXFORD of San Francisco, reported a case in a young woman of twenty-seven who had remained well for ten years since the operation, during which time she had been twice pregnant.

DR. MCCLENON of Baltimore, reported a case in a man sixty years of age who had been twice operated upon for the removal of the growth, the last time only a couple of months ago.

DR. CONNELL of Fon du Lac, reported two cases on each of whom he operated with good results and without recurrence.

DR. WILLOUGHBY of Los Angeles, reported a case which was inoperable, but which improved very markedly on the use of the Coley serum.

DR. FULTON of Astoria, reported a case on which he operated sixteen years ago, and in which there has been no recurrence.

DR. L. L. MCARTHUR of Chicago, reported a case successfully operated upon by him which very well illustrated the difficulties of diagnosis in these cases.

The Chairman, Dr. Richardson, referring to Dr. Willoughby's remarks concerning the Coley serum, stated that he also had seen patients materially benefited by this serum.

DR. POWERS, in closing, called attention to the diagnostic difficulties in these tumors and stated that he heartily agreed with the ideas of Prof. Jacobi of New York, who said that "When clinical facts collide with previously existing scientific knowledge the knowledge goes to the wall and the facts stand."

SPLANCHNOPTOSIS FROM A SURGICAL STANDPOINT.

DR. JAMES E. MOORE of Minneapolis, detailed a number of cases occurring in his experience and gave his methods as well as the results of treatment.

DR. COFFEY, Oregon, showed some illustrations of work done by himself in similar conditions, and expressed doubt as to the amount of weight the peritoneum and ligaments were capable of supporting.

DR. A. ERNEST GALLANT of New York, did not believe operation was necessary in many of these cases and argued in favor of posture. He blamed the construction of the clothing of the average trouble, which he said no surgery would overcome. A special corset should be worn to relieve the tension at the waist and should be so adjusted as to produce a bulging of the stomach at the epigastrium.

DR. B. B. DAVIS of Omaha, commented on the helplessness he always feels when women come to him with their relaxed muscle and pearshaped abdomens. He reported having operated upon some with varying results, one case however being particularly successful.

DR. MOORE, in closing, stated that there was no case on record of the liver having been torn from its moorings by injury, which shows the tremendous power of the ligaments of that organ.

THE EARLY DIAGNOSIS OF GASTRIC ULCER.

DR. H. D. NILES of Salt Lake City, claimed that the symptoms on which we relied in the past to aid us in making a diagnosis were only of value in a small proportion of cases, anatomic, physiologic and pathologic evidence pointing to the frequency and importance of this condition. The operating-room revelations he said confirmed this evidence. As to diagnosis, he considered that no one symptom was sufficient to arrive at a conclusion. He compared the relative frequency of different symptoms and believed that dyspepsia, gastralgia and gastric catarrh were often made responsible for symptoms unquestionably due to gastric ulcer. In his opinion, the relative frequency of gastric ulcer should lead us to suspect its possible existence in all chronic stomach cases resisting conservative treatment, and he grouped the symptoms

[14] Münch. Med. Wchr., Dec. 20, 1904.
[15] Deut. Med. Wchr., Feb. 9, 1905.
[16] Deut. Med. Wchr., Jan. 5, 1905, *et seq.*

which are suggestive of gastric ulcer; some of them justifying exploratory incision or other operative interference.

CLINICAL EXPERIENCES WITH THE USE OF THE MCGRAW ELASTIC LIGATURE.

DR. A. J. OCHSNER of Chicago, described these operations at some length, gave the details of a number of his cases together with the results obtained with this ligature.

ULCER OF THE STOMACH AND FIRST PORTION OF THE DUODENUM, WITH ESPECIAL REFERENCE TO THE OPERATIVE TREATMENT.

DR. W. J. MAYO of Rochester, Minn., gave the statistics of post-mortem records of gastric ulcer, London showing 4.6; Europe, 8.54 and seven American cities, 1.42. He stated that the statistics of records of clinical observations showed only 0.08 to 0.52 diagnosis made and commented on the increasing frequency of uncured cases in surgical clinics. He reported 215 cases operated upon by gastro-jejunostomy during the last two years and three months, of which 111 were males and 104 females, 67 of the cases showing ulcer of the duodenum or duodenum and stomach, 48 being males and 19 females. He considered there were two clinical varieties of ulcer, the medical and the surgical, the medical invading only the mucous coat and could not be located without opening the gastric cavity, while the surgical invaded all the coats of the stomach and was easily identified. He closed his paper with some remarks on gastro-jejunostomy.

DR. PANTZER of Cincinnati, believed that palpation of an ulcer was possible oftener than was supposed. He described some operations for this condition performed by himself and called particular attention to one case in which the patient has remained perfectly well for thirteen months since the operation.

DR. A. P. FRANCINE of Philadelphia, read a large number of statistics which had been referred to by Dr. Mayo in his paper and which were obtained from the analysis of 2,830 autopsies on patients dying in the Philadelphia hospital.

DR. GEORGE GOODHUE of Dayton, Ohio, did not see any advantage in the use of the McGraw ligature, but on the other hand felt that there were certain disadvantages, the principal one being its interference with early nutrition through the stomach.

DR. J. H. CARSTENS of Detroit, disagreed with Dr. Ochsner in stating that he did not consider the McGraw ligature suitable for pyloroplasty, as in Dr. Carsten's opinion it was in just such cases that it was suitable. He urged that surgeons should always see operations performed before trying to do them, and not be guided by descriptions published.

DR. SMITH of Portland, Oregon, looked upon Finney's operation as an ideal one in all cases of benign stenosis, and spoke in favor of Moynihan's latest modification of gastro-enterostomy. He reported having had three cases of this operation lately in none of which did vomiting occur subsequently.

DR. OCHSNER, in closing, reported having had bad results in three cases on which he had performed Finney's operation with the McGraw ligature. As to the early nutrition through the stomach referred to by Dr. Goodhue he was inclined to agree with the doctor. He considered a very important point in connection with the Moynihan operation as now performed was that the patient could be fed within twenty-four hours.

DR. MAYO, in closing, felt unable to answer Dr. Francine's inquiry as to whether gastric ulcer was secondary to certain diseases secondary to the bad nutrition produced by the ulcer. He reminded the members that the Finney operation could only be successfully done where one had good tissue to work in, so that scar tissue practicallly contra-indicated this operation. He described an operation performed by himself sixty times, which he felt would be the operation of the future.

ACID INTOXICATION AND LATE POISONOUS EFFECTS OF ANESTHETICS.

DR. A. D. BEVAN of Chicago, referred particularly to the acid intoxications and late deaths following chloroform anesthesia and reported a case in full, the medical report having been prepared by Dr. Favill, the neurologic report by Dr. Patrick, the post-mortem examination by Prof. Hektoen and the surgical by himself. He detailed some laboratory experimental work along this line, and referred to the literature of cases similar to his own. He concluded that chloroform was a frequent cause of death some days after anesthesia, with a definite symptom complex and constant post-mortem findings, the condition being as definite a pathologic entity as acute pancreatitis or phosphorus poisoning.

DR. HENRY C. MOFFITT of San Francisco, reported six cases seen by himself in consultation where death had followed chloroform anesthesia and expressed the opinion that chloroform should be avoided in all cases where there had previously existed any disease of the liver.

DR. HARRY M. SHERMAN of San Francisco, stated that Dr. Bevan's paper had made clear to him what the trouble had been in a case recently under his care.

DR. WOODS HUTCHINSON of Portland, Oregon, stated that the greater frequency in children of the condition referred to by Dr. Bevan was probably due to the fact that surgeons had always considered chloroform perfectly safe in children. He expressed the hope that Dr. Bevan's paper would materially assist in the acceptance of the new view regarding the liver, which was that it was not a part of the digestive system, one of its principal functions being the reduction of toxine in the blood. Just so soon as the liver could no longer detoxicate uremia resulted.

DR. BINSWANGER of Portland, Oregon, considered that the cause of death from chloroform poisoning was due to death of the liver cells. He referred to the existence of toxines found in the blood which, although they produced acidosis, were in his opinion essential in some diseases, as, for example, diabetes.

DR. D. A. K. STEELE of Chicago, reported the death of a girl of twelve following chloroform anesthesia which had been produced twice for different operations within about two weeks of each other.

DR. BEVAN, in closing, agreed with Dr. Binswanger as to the primary cause of death being a destruction of the liver cells.

PERFORATIONS IN TYPHOID FEVER.

DR. RICHARD H. HARTE of Philadelphia, detailed a large number of cases occurring in his practice, giving the symptoms and treatment with the result in each case.

DR. LAWRENCE LITCHFIELD of Pittsburg, Pa., asked whether Dr. Harte referred to a general or a local anesthetic, and also whether he had made any blood counts in his cases with a view of determining the condition of the blood pressure.

DR. CHARLES A. POWERS of Denver, referred to the previous work of Dr. Harte along this line and the influence it had had in stimulating physicians to be on the lookout for preparations and to more promptly treat them.

DR. MANGES of New York, claimed to have reported

nineteen cases last year, in only three of which was there a drop in temperature; in fact, in most cases it rose. He attached considerable importance to sweating and rigidity, and considered that too much attention was paid to percussing the spleen in these cases and not enough to the percussing of the liver and abdomen. He believed spontaneous recovery was quite possible and commented on the good results following operation even where no preparation was found.

Dr. Harte, in closing, stated he had had no experience with the question of blood pressure, although it was a well-known clinical fact that in pre-peritonitis the blood pressure always went up. He said he always used general anesthesia and employed silk in closing the gut. He did not believe there was anything to be gained in cutting out the ulcer, but he did think the fall in temperature was important. He advised that medical men in hospitals should have their typhoid cases seen occasionally by the surgeon on duty in order that the existence of any symptoms possibly indicating the likelihood of perforation might be noted.

Wednesday Morning.

A CLINICAL CHART FOR THE RECORD OF PATIENTS IN A SMALL HOSPITAL.

Dr. George F. Wilson of Portland, Oregon, stated that on account of the scarcity of clerical help in small hospitals throughout the country no record was usually preserved of the scientific work done in each case. He demonstrated a simple form of chart which he had prepared with a view of overcoming this difficulty without the necessity of the data being copied into record books and asked for suggestions and improvement in the recording of the data and the filing of the charts so that such work might be preserved in an accessible form.

Dr. Wright of Salt Lake City, considered that the chart was too large for practical purposes and that some of the sub-divisions were poorly spaced.

Dr. Harry M. Sherman of San Francisco, felt that a great drawback to the chart was the fact that one had to write on both sides and also that it was to be kept by an assistant or nurse and not by the chief himself He called attention to the importance and value of his own method of always having one sheet attached to every history on which he personally recorded his own notes, which he had found very valuable for future reference.

Dr. Wilson, in closing, admitted the value of the criticisms offered, and stated that his present method of disposing of the charts was to fasten them together with a clip at the top and file them in a separate room.

PRELIMINARY REPORT OF A STUDY OF TETANUS.

Dr. James M. Anders of Philadelphia, admitted that the prevailing dues showing tetanus to be a purely surgical disease was corroborated by his observations. Its distribution and prevalence in the United States were referred to and reports of endemic and epidemic occurrence were detailed. Interesting cases of vaccination tetanus and puerperal tetanus were given and a number of cases not previously reported were tabulated. The bacteriology, etiology, pathology, clinical history and treatment, with special reference to the cases collected by the author, were reviewed; the results of serum treatment were given and conclusions were drawn from the author's collective investigation.

Dr. C. A. Smith of Hartford, inquired what preparation of catgut it was which had proved tetanic.

Dr. L. L. McArthur of Chicago, referred to the different kinds of wounds in which one might reasonably expect tetanus to develop and to the fact that delayed diagnosis was the cause of the failure of treatment. He stated that during the past ten years, since the World's Fair in Chicago, it had been the practice in that city to administer antitetanic serum in all cases where tetanus was suspected, and not in one case so treated had the disease developed. He considered that the use of the serum unnecessarily could do no harm and it did without a doubt act as a prophylactic.

Dr. McCusker of Ft. Wayne, believed that the treatment of tetanus should begin with the inspection of the wound and he did not believe that to subject a patient with a suspicious injury to an injection of antitetanic serum was rational treatment. In his opinion the opening and cleansing of the wound was the only treatment necessary, the condition being purely one of infection. He reported having used transfusion with good results in a patient some years ago, having first depleted the patient by removing considerable blood.

Dr. Walsh of Erie, Pa., did not consider that thorough cleansing of the wound, never mind how promptly done, was sufficient and he reported a case occurring in his practice where he thoroughly cleansed the wound and injected pure carbolic acid within an hour after the injury, but the patient died of tetanus three weeks later.

Dr. R. A. McLean of San Francisco, believed that the treatment resolved itself into getting the antitoxin in contact with the toxin by prompt injection into a large vein, as its effect was so quickly destroyed when injected merely into the tissues. The injection should be made into the nerve trunks leading to the injured parts, using sufficient anti-toxin to swell the nerve up to three or four times its normal size. The frequency of the injection should be decided by the results obtained, but in any event he considered that the local treatment should come last. In a bad case he urged anti-toxin injections into the spinal cord itself.

Dr. Anders, in closing, considered the anti-toxin treatment as prophylactic rather than curative. He did not believe it was of much value after the disease had developed, and urged if possible more prompt diagnosis, giving as symptoms which might be considered as suspicious of the probable development of tetanus, increased pulse rate without any other assignable cause, peculiar nerve irritation, etc. He reported that the local use of dried serum had been followed by good results, and stated that he felt tetanus should be considered both a medical and surgical disease.

CYSTS OF THE SPLEEN.

Dr. W. A. Bryan of Nashville, Tenn., read this paper and said cysts of the spleen rarely occurred without similar lesions elsewhere. They are classified as I Dermoid, — one case reported by Andral, II, Simple, Serous, or Blood Cysts, III, Echinococcus Cysts.

He stated cysts walls were fibrous tissue with more or less unstriped muscle fibres, with or without endothelial lining. Contents varied with type of cyst. Small cysts produce no symptoms. Large cysts, he stated, produced symptoms by their size and weight. Begun in left hypochondrium, movable unless adhered, fluctuant, pain in left hypochondrium, epigastrium and left subscapular region. Nausea and vomiting might occur and rarely obstructive symptoms. Hydatid thrill absent in 50% of echinococcus and found at times in ascites and ovarian cysts.

Splenic cyst must be differentiated from abscess of spleen, ovarian cysts, growths of the pancreas, hydronephrosis, mesenteric cysts, and enlargement of the

spleen from malaria and leukemia. The history, the point of origin, direction of growth, the rate of uniformity of growth, or its absence, together with collateral symptoms and signs now and then make a diagnosis possible. Cyst of a wandering spleen would present great difficulty of diagnosis.

Terminations of cysts of spleen are absorption, abscess formation, rupture into a viscus or into the pleura or abdominal cavity, where the fluid is capable of producing numerous cysts of the peritoneum echinococcus.

Treatment is to open and drain or do splenectomy. Do not excise part of spleen; do not aspirate.

Report of case: White woman, age thirty-nine, had tertian chills three years ago covering period of one year. Tumor began to show August, 1903. Reached three or four inches of pubis, fluctuating, lobulated, movable, reducible to left hypochondrium. Splenectomy, as spleen was practically obliterated, removed through transverse meso-colon because of adhesion. Weight of tumor, 2½ lbs.

Fluid sp. gr. 1006, no albumin, no hooklets or scolecis.

Recovery. Dismissed in twenty-one days.

INDICATIONS FOR THE REMOVAL OF THE PATHOLOGIC SPLEEN.

Dr. B. B. Davis of Omaha, reviewed the recent pathology of the spleen and the several pathologic conditions suitable for splenectomy. Splenic anemia, malarial spleen, sarcoma, tuberculosis and abscess were referred to at considerable length, and a detailed report given of a successful splenectomy with clinical blood and pathologic findings.

Dr. M. L. Harris of Chicago, urged the making of blood examinations both before and after splenectomy and took exception to the statement that these examinations showed that the spleen produced red blood cells. As a proof of his contention he stated that immediately after the removal of the spleen there was a marked increase in the number of red cells of from 25 to 40% and in one case an increase in the white blood cells of 800%. In his opinion whatever the function of the spleen might be in regard to its blood forming or blood destroying effects, as patients lived and maintained perfect health after the spleen had been removed. He reported that the one permanent and constant feature in the composition of the blood after the removal of the spleen was a marked increase in the percentage of the eosinophiles. He detailed a case from which he had removed the spleen more than six years ago and in which he had made repeated blood examinations every three or four months since. The eosinophiles increased to 15% and this percentage had remained.

Dr. Charles A. Powers of Denver, agreed with Dr. Bryan that non-parasitic cysts of the spleen are of a sero-sanguineous type. He reported a case of a young man of eighteen operated upon by himself in 1895 of an enormous left-sided abdominal tumor extending from the diaphragm to the pelvis which proved to be a splenic cyst. The patient died on the twelfth day after operation from septic absorption, which took place from the cyst wall. The patient's condition was practically irremediable and total extirpation impossible. He reported thirty-two cases from literature, detailed the methods of treatment employed in twenty-eight of them, and stated that of the various procedures the only one which had proved satisfactory was splenectomy, all of the ten cases so operated upon having recovered.

Dr R. E. Schlueter of St. Louis, reported a case of traumatic rupture of the spleen seen by himself ten hours after the injury. The patient was a boy fourteen years of age and the spleen was found to have been cut completely in two. The resulting hemorrhage was completely arrested before the operation. Subsequently a slight enlargement of all the lymphatic glands of the body was noticed and also a leucocytosis which never went above 20,000.

Dr. A. H. Cordier of Kansas City, considered that one of the most important points in Dr. Davis' paper was whether or not the disease was primary or was a secondary manifestation of some disease in another part of the body. He reported the case of a man twenty-one years of age who had had jaundice for nineteen years and who, upon a cholecyst-enterostomy being performed showed considerable enlargement of the liver and spleen. A year and a half later he developed a well-marked case of splenic anemia. He referred to the rarity of ascetis in cases of this kind and advised care in the selection of cases for operation particularly where the condition occurred in drinking subjects.

Dr. H. G. Marxmiller of Cincinnati, divided a subject into two parts — surgical spleens and medical spleens — and advised the examination of a dried specimen of the blood before deciding upon operation. Splenectomy for the relief of leukemia and allied conditions having given a mortality of almost 100% he felt should cause surgeons to be less bold in the removal of spleen. He commented on the fact that Senn, Dock, and others had reported cases of splenic anemia following protracted cases of typhoid in which complete recovery had followed the use of the x-ray. He detailed a case of chronic myelogenous leukemia which had been under his care for some years with all distinctions of splenic enlargement, the spleen reaching to the brim of the pelvis and increasing the abdominal diameter by 8 or 9 inches. After deciding that to attempt its removal would be folly he commenced internal medication with adrenalin chloride, up to one thousand, in 30-minim doses and the application of the x-ray to the splenic substance, the result being the reduction of the spleen almost to its normal size and a return of the patient to good health. He believed that one must first make a thorough diagnosis and then endeavor to relieve the condition by other methods before attempting splenectomy.

Dr. McDaniels of San Antonio, reported the case of a woman from whom he had removed the spleen six years ago and who has since borne children and remained well.

Dr. W. Jepson of Sioux City, Iowa, divided the subject into several headings and considered under one heading those affections of the spleen which were primary, as, for example, sarcoma, carcinoma, cysts, tuberculosis, and miliary abscesses. Under another heading he considered injuries and displacements, and finally those conditions which were secondary to causes elsewhere, as, for example, leukemic spleens, medullary spleens and many others. He did not believe that many enlarged spleens needed to be considered surgically unless the enlargement was a menace to health and life. The marked diminution of the red blood cells following splenectomy might, he felt, be due as much to the hemorrhage following the operation as to the absence of the spleen itself. He reported a case operated upon by himself two and a half years ago which has remained perfectly well ever since, in which the white blood cells were increased after the operation, reaching 24,000, and continued so for nearly three weeks, while the red blood cells were markedly diminished. He considered that our knowledge of the function of the spleen was very slight and therefore advised conservatism in our operative dealings with that organ.

Dr. Griffiths of Kansas City, detailed the case of a child six years old operated upon by himself for an enlarged spleen following a severe attack of whooping cough. A remarkable circumstance in connection with this case was that whereas before the operation the child was of a phlegmatic temperament, since the operation he has shown a decided tendency towards being vicious.

Dr. Bryan, in closing, stated that there are forty-one cases of non-parasitic cysts of the spleen so far recorded, of which only twelve were classified as simple, but he believed simple serous cysts were extremely rare. He believed that the danger of splenectomy was considerably greater in those cases where the spleen was functionating than it was where the function had ceased. He reported a case where the cyst and spleen together weighed 2½ lbs. but there was not more than 1½ oz. of real spleen tissue.

Dr. Davis, in closing, reported that, so far as he could learn from the literature, the removal of the spleen was almost universally followed by a decrease in the red blood cells, and in cases where an increase followed he thought perhaps it might be due to the establishment of the vicarious function of the bone marrow. He looked upon the belief that the spleen manufactured red blood cells as a very plausible theory. He took exception to the suggestion of Dr. Jepson that possibly in some cases of splenic anemia the spleen was not the primary lesion, instancing the fact that the removal of the spleen had almost always been followed by restoration to health. He briefly analyzed alcoholic splenic hypertrophy and a differentiation between enlarged spleens due to different causes, and stated that we do get a secondary cirrhosis of the liver and acetis in cases of primary splenomegaly. He urged operation before these complications arose.

(To be continued.)

Recent Literature.

Transactions of the American Medical Association. Section on Ophthalmology. Atlantic City, N. J., 1904. Chicago: Am. Med. Assoc. Press. 1904.

The report of the transactions of the section on ophthalmology is a collection of thirty-eight carefully prepared papers, which, with the appended discussions, make a volume of five hundred and seventy pages. The variety of topics selected as titles for these papers together with the freedom in expression of individual opinions during the discussions cover a wide field in ophthalmology and make the book of practical value.

The Ophthalmic Year Book. By Edward Jackson, A.M., M.D. 45 illustrations. Denver: The Herrick Book Co. 1904.

On account of the rapid increase in literature bearing upon opthalmology, a growth which is said to exceed 20,000 pages each year, and in order that there may be some systematic arrangement of this material, Dr. Jackson states, in his announcement, that, with this object in view, he expects to supply by the Year Book a critical digest of what is important in the literature of the past year, hoping thereby that thus may the practitioner be kept in touch with the progress of his specialty at a minimum of personal effort. He has thought it unnecessary to include such articles as may contain opinions or facts already to be found in ophthalmic literature unless they be supplemented by general study of the subject. The projected series of volumes will undoubtedly prove both interesting and profitable reading. The book likewise contains a list of publications for the year and a complete index.

Climate and Health in Hot Countries and the Outlines of Tropical Climatology. A Popular Treatise on Personal Hygiene in the Hotter Parts of the World, and on the Climates that will be met within them. By Lieut.-Col. G. M. Giles, M.B., F.R.C.S. Indian Medical Service (Retd). New York: William Wood & Co. 1905.

Dr. Giles has written an interesting volume on the conditions of personal and domestic hygiene in the hotter parts of the world, which ought to be of value to persons contemplating a residence within the tropics. While the volume deals chiefly with the conditions of climate and health of India, most of his advice will be directly applicable to the tropical portions of our own country, and the new regions coming under our control at Panama. Part I is written primarily for popular use, and shows excellent judgment in the setting forth of medical problems for the general reader. Part II deals with the Outlines of Tropical Climatology, and contains a large number of meteorological tables for places hitherto not reported in any easily accessible volumes. The illustrations leave much to be desired.

Diseases of the Heart. By Edmund Henry Colbeck, B.A., M.D., B.C., F.R.C.P., D.P.H. Physician to Out-Patients at the City of London Hospital for Diseases of the Chest, etc. Second edition, revised and enlarged. Chicago: W. T. Keener & Co. 1905.

The author has added very little to the subject matter of the first edition, practically the only new description being a few paragraphs on the Stokes-Adams syndrome. The publishers in spite of a few more pages have made a much more compact volume in this edition than in the first.

Pneumonia and Pneumoccocus Infections. By Robert B. Preble, M.D., Professor of Medicine, Northwestern University. Chicago: Cloyd T. Head & Co. 1905.

A summary of ever-present knowledge of the pathological conditions caused by the Fraenkel-Weichselbaum diplococcus. It also makes a handy little volume of about 200 pages, intelligently presented and very readable. The bibliography is not tabulated but constant reference is made in the text to the most important reports in the field of research.

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DEATHS BY VIOLENCE.

The custom of publishing from time to time statistics of railway and other accidents is commendable. It serves in the first place as a basis of comparison between the relative danger of travel under present conditions as compared with the past; it also brings forcibly to mind the number of persons yearly sacrificed to human carelessness, however remote the individual blame may be. The Interstate Commerce Commission has recently issued an accident bulletin which discusses the railway accidents in the United States for the months of January, February and March, 1905. A study of these statistics shows that during this quarter 28 passengers and 204 employees were killed and 1,651 passengers and 2,062 employees injured in accidents, making a total of 232 killed and 3,713 injured. Adding other accidents to passengers and employees not due to collision or derailment the number is brought up to 909 killed and upwards of 14,000 injured. Sixty-two employees were killed while coupling or uncoupling cars. There were, during the quarter, 27 more collisions and 131 more derailments than in the preceding quarter, and the total cost of accidents has amounted to nearly two million and a half.

There seems to be no adequate reason why the safety of travel abroad should be greater than in this country, and yet this seems to be the fact. Although the causes of accident have not infrequently been shown to be due to a failure to use certain well-recognized devices for increasing safety, the accidents continue and even show an increase. It must naturally be borne in mind that the railway system of the United States is constantly increasing in scope and probably with more rapidity than is the case abroad. It is also true that grade-crossings through large towns and cities continue to be far too numerous, and that the danger, in spite of gates and other precautions, increases with the density of the population. Such causes of accidents as these will be slow of removal, but it is hardly to be expected that accidents will be very materially diminished until such avoidable causes of danger are radically removed.

Another danger to life is beginning to assume definite proportions in the relation of the automobile to itself and to the populace. Not a week passes that accounts do not appear in the papers of serious injury or deaths resulting either from the carelessness of persons driving automobiles or from defects of machinery. For example, some statistics published recently in Chicago showed that in the first seven months of the year seven persons were killed and 54 injured in Chicago alone, as compared with last year's record of one killed and 73 injured. Not long since in this community in the course of about two weeks three persons were killed or received injuries from which they died. In general, with the increase in the use of the automobile, which is inevitable and which, under certain restrictions, is no doubt desirable, there can be no question that the number of violent deaths and injuries, although, perhaps not equalling that for which the railroads are responsible, will increase as time goes on. It is easy to foresee that more stringent laws, greater personal care on the part of chauffeurs and a recognition by the public that automobiles must be accepted as a possibility on any street will help the situation, but the fact remains that a new danger to life has been introduced which must claim a certain number of victims each year.

A still further menace to which we shall always be exposed is death from drowning. Possibly due to the exceptional heat of this summer, or to the increasing number who take advantage of out-door bathing, there has already been an appaling list of fatalities, some among the inexperienced and many among those who made special claim to expertness.

Although we have no statistics at hand, we are, however, inclined to think that the accidents of which we have been speaking are not increasing unduly in number when we consider all the factors in the situation. In any event, the satisfaction and benefit which comes to great numbers of the population through out-door sports atones in some measure for the increasing death-rate from avoidable causes.

YELLOW FEVER.

In our issue of last week we commented upon the yellow-fever situation in New Orleans, drawing attention to the fact that the city had not done its utmost toward a prevention of the disease on scientific lines. Now, with upwards of five hundred patients and more than a hundred deaths, it is evident that the most vigorous measures are to be enforced. Whatever position we may take regarding the apparent failure of the local authorities to deal with the situation, and the assumption of authority by the Federal Government, it is not to be questioned that what may have been neglected in the past will be rectified as far as possible and a campaign based on our present definite knowledge of the disease instituted. It is stated that forty commissioned officers and others will be placed on the scene at once; that the city will be marked off into districts with a commissioned officer in charge of each district, each with gangs of men to carry out the necessary prophylactic measures. The spirit of the city is exemplified by the fact that the very considerable expense necessitated by the work will be borne as far as required by the citizens. A guarantee fund of seventy thousand dollars has already been subscribed for this purpose, and more may be easily raised. In contrast to the somewhat lamentable situation in New Orleans reports from Mexico show that various cities in which the disease has regularly occurred are this year practically free, immunity being based upon the theory that the mosquito is alone responsible for the disease. The isolation and screening of patients when sporadic cases have occurred has been most satisfactory as a preventive.

The appearance of yellow fever in New Orleans is, therefore, chiefly significant in the attention it draws to the progress which has been made in combating the disease during the past few years. So complete has been the mastery of the condition that we naturally feel a certain sense of chagrin that it should have obtained the foothold it has in New Orleans. However careful the authorities may be, it is inevitable at times that in the thickly populated portions of large cities, inhabited by people wholly ignorant of the simplest rules of hygiene, a disease once appearing should be difficult to eradicate immediately. What is far more striking than the existence of the disease in New Orleans is the extraordinary immunity which has been conferred upon all our Southern cities by the discovery of its cause and by attention to common-sense laws of hygiene, which it appears New Orleans has not strictly observed.

Ten years ago the existence of the disease in many localities was accepted as one of the necessary consequences of the summer season, whereas in Cuba it was practically endemic the year round. In the neighborhood of one hundred years ago yellow fever was a not infrequent visitor in the Northern states. In connection with an epidemic which swept over Philadelphia in 1793 it is said that Stephen Girard organized a hospital, assumed control of it for two months and did what was then possible toward combating the disease which was killing hundreds of people. As late as 1878 in Memphis, Tenn., there were upwards of five thousand deaths and within very recent years Charleston, South Carolina, has also been invaded. New Orleans, however, has always been a special sufferer, losing in one year nearly eight thousand. In view of these facts the present situation in the latter city is interesting by contrast. We are so willing to accept the benefits which are conferred upon us that it is almost impossible, at least for the laity, to recognize the enormous step in preventive medicine which the recent researches on yellow fever have brought about. Valuable men have lost their lives in this work; but when we contemplate the Southern states in a particularly hot summer practically free from a disease, which has always prevailed there heretofore to a greater or less extent, we can the better appreciate the full significance of the relatively trifling epidemic which is now going on in New Orleans.

UNITY, PEACE AND CONCORD.

Dr. Osler's farewell address to the medical profession of the United States comes somewhat belated to the general medical public in the current issue of the *Journal of the American Medical Association*. This address, for which he selected the title "Unity, Peace and Concord," was delivered at the annual meeting of the Medical and Chirurgical Faculty of Maryland, in Baltimore, April 26, 1905. It is a very happy expression and summary of what he has long stood for in American medicine. Beginning with a statement in one paragraph of his own life and ambitions, he enters forthwith upon the essential difficulties and problems which the present time is forcing upon the attention of the profession. He pleads for co-operation, the encouragement of special societies, for concentration, fusion and consolidation. Reciprocity between the state licensing boards he regards as one of the most urgent local needs. Another is a consolidation

of many of our medical schools rather than a further development of the somewhat useless competition naturally arising between them. Of homeopathy he speaks as follows:

"It is too late in this day of scientific medicine to prattle of such antique nonsense as is indicated in the 'pathies.' We have long got past the stage when any 'system' can satisfy a rational practitioner, long past the time when a difference of belief in the action of drugs — the most uncertain element in our art! — should be allowed to separate men with the same noble traditions, the same hopes, the same aims and ambitions. It is not as if our homeopathic brothers are asleep — far from it — they are awake — many of them at any rate — to the importance of the scientific study of disease, and all of them must realize the anomaly of their position. It is distressing to think that so many good men live isolated, in a measure, from the great body of the profession. The original grievous mistake was ours — to quarrel with our brothers over infinitesimals was a most unwise and stupid thing to do. That we quarrel with them now is solely on account of the old Shibboleth under which they practice. Homeopathy is as inconsistent with the new medicine as is the old-fashioned polypharmacy, to the death destruction of which it contributed so much. The rent in the robe of Æsculapius, wider in this country than elsewhere, could be repaired by mutual concessions — on the one hand by the abandonment of special designations, and, on the other, by an intelligent toleration of therapeutic vagaries which in all ages have beset the profession, but which have been mere flies on the wheels of progress."

Under the caption "Peace," Dr. Osler says admirably what he has in various ways been impressing upon us for many years. The most dangerous foe we have to fight is apathy, to which he maintains fully 25% of deaths in the community are due, a showing which goes far to counterbalance the achievements of the past century. Finally, he has much sound philosophy regarding concord. This and, in fact, the entire address may well be read by physicians, both young and old, when the jealousies arise and the rivalries are particularly active. Taken all in all, this last address of Dr. Osler before leaving this country, although not strikingly original, is the more valuable as expressing the final and dispassionate judgment on the broad subject of medical character of a man who has merited the highest estimation of his colleagues,.

MEDICAL NOTES.

Honorary Fellows of the Royal College of Surgeons, Edinburgh. — At the recent celebration of the fourth centenary of the Royal College of Surgeons of Edinburgh among twenty-two surgeons who received honorary fellowship were the following Americans: Drs. W. S. Halsted and Howard Kelly of Baltimore, Dr. W. W. Keen of Philadelphia, Dr. William J. Mayo of Rochester, Minn., Dr Charles McBurney of New York, and Dr. J. C. Warren of Boston.

President of the American Medical Association. — It is announced that Dr. William J. Mayo of Rochester, Minn., has been elected president of the American Medical Association.

Smallpox in Chicago. — The *Bulletin of the Chicago Health Department* for the week ending July 29 shows that six unvaccinated children were moved to the isolation hospital, which is the smallest number of smallpox cases in any week since last fall. Forty-seven cases remained in the hospital, but there were no deaths during the week and no cases so serious as to make a fatal result probable.

British Association for the Advancement of Science. — The British Association for the Advancement of Science this year holds its meeting, beginning Aug. 15, chiefly at Cape Town and Johannesburg, South Africa. The association has previously held two meetings in Canada, but, with this exception, it has never met before outside of the United Kingdom. Prof. G. H. Darwin, as president, will deliver his address in two portions, the first at Cape Town, Aug. 15, and the second at Johannesburg, Aug. 30. Many medical papers are announced. The meetings should bring much of interest to its members outside of the scientific communications.

Pathology Endowment Fund at Oxford. — A fund is being raised to provide for a suitable endowment for the chair of pathology in Oxford University. Upward of £2,000 has already been secured. In pursuance of this plan an address was presented to the University in June by a deputation from the Oxford medical graduates which was in part as follows:

"We believe that, although Oxford cannot successfully enter into competition with the metropolis and other large centers for the purpose of clinical teaching, the scientific training of the medical student can be most efficiently carried out in the University; and as a part of the curriculum we consider that the scientific aspect of pathology and bacteriology, as distinct from morbid anatomy, should be permanently provided for at Oxford. This object can only be attained by an endowment, which will secure permanent provision for the teachers of pathology and for the maintenance of the excellent laboratory the University already possesses."

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, Aug 9, 1905, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 11, scarlatina 9, typhoid fever 10, measles 11, tuberculosis 21, smallpox 0.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, Aug 5, 1905, was 234, against 250 the corresponding week of last year, showing a decrease of 16 deaths, and making the death-rate for the week 19.36. Of this number 130 were males and 104 were females; 231 were white and 3 colored; 176 were born in the United States, 57 in foreign countries, and 1 unknown; 51 were of American parentage, 158 of foreign parentage, and 25 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 19 cases and no deaths; scarlatina, 4 cases and 1 death; typhoid fever, 22 cases and 3 deaths; measles, 8 cases and no deaths; tuberculosis, 36 cases and 8 deaths; smallpox, no cases and no deaths. The deaths from pneumonia were 13, whooping cough 4, heart disease 20, bronchitis 2, and marasmus 14. There were 12 deaths from violent causes. The number of children who died under one year was 83; the number under five years, 107. The number of persons who died over sixty years of age was 29. The deaths in public institutions were 75.

Disposal of Wastes. — The New Hampshire State Board of Health has done a practical service in publishing as a supplement to its sanitary bulletin for July a statement prepared by Robert Fletcher, Ph.D., regarding the disposal of household wastes at summer resorts, encampments and farmhouses, with a consideration of a pure water supply and other sanitary conditions. The pamphlet may well be read by those interested in sanitary questions. It is, in fact, issued because many calls have been made upon the Board of Health for advice concerning sanitary conditions and methods of abatement of nuisances. It furthermore contains information, advice and a summary of the legal requirements relating to various matters affecting health and comfort.

Progress of the Out-Door Sanatorium for Tuberculosis. — There are now fifty-one patients being cared for in the out-door sanatorium for the relief of tuberculosis on Parker Hill near Boston. This camp was opened one month ago, and at that time we commented on the project editorially. The work began with fourteen patients, which have been more than trebled during the past four weeks. Examination of the patients shows almost without exception improvement in their condition. Of twenty carefully examined on the twenty-eighth day ten were distinctly improved and all but three showed evidences of benefit. The average gain in the weight of the patients has been two and a half pounds. The camp is rapidly passing its experimental stage and may soon be regarded as an established success.

Resignation of Dr. Hibbert W. Hill. — It is announced that Dr. Hibbert W. Hill, at present director of the Bacteriological Laboratory of the Boston Board of Health, has resigned his position and accepted an assistant professorship of bacteriology at the University of Minnesota and the assistant directorship of the Minnesota State Board of Health Laboratory. Dr. Hill has been in Boston seven years and during that period has done much to advance the scientific work of the Board of Health, through the organization of the Bacteriological Laboratory and the admirable work which has been accomplished through it under his direction. His knowledge of the subject has led to the establishment of laboratories in various cities, in the organization of which he has been called in consultation. His medical work has been largely concerned with problems relating to public health which he has uniformly regarded from an eminently scientific standpoint. His departure for his new field will be a distinct loss to this community. It is stated that the contract has been awarded for a new building to be devoted to bacteriology at the University of Minnesota at a cost of a hundred thousand dollars.

Bequest for a Hospital. — It is reported that the late Mr. Leander M. Haskins of Rockport, Mass., has left many bequests of a public character, among the most significant of which is a hospital. It is stated that his residence, with forty acres of land, beautifully located on the outskirts of the town, is to be left for this purpose and for a public park.

NEW YORK.

Mortality during July. — The mortality reported in the city during the month of July represents an annual death-rate of 23.27, as against 17.23 in June and 21.79 in July, 1904. The increased death-rate is unquestionably due to the continued high temperature with humidity in the second and third weeks of the month, for in the first and fourth weeks the number of deaths

reported was smaller than in the corresponding weeks of last year. In the week ending July 22, the deaths from diarrheal diseases reached the high figure of 685, there were 151 deaths attributed to sunstroke, and the mortality was augmented in a number of other affections. This was notably the case in organic diseases of the heart. Among the diseases in which there was a diminished fatality were the following: The weekly average of deaths from diphtheria and croup declined from 28 in June, to 21.5 in July; the weekly average from scarlet fever, from 9 to 3; from measles, from 23.75 to 15; from pneumonia, from 70.25 to 40.75; from bronchopneumonia, from 69 to 56.25; from acute bronchitis, from 20 to 16.5; from pulmonary tuberculosis, from 159 to 148.5; from Bright's disease and nephritis, from 105.5 to 100.75; from organic heart diseases, from 89 to 82.5; and from epidemic cerebrospinal meningitis, from 44.25 to 22.75. During the week ending July 29, there were but 10 deaths reported from the last-named disease, the lowest number in any one week for many months. There were but two deaths attributed to influenza in July, as against six in the month of June. In the week ending July 29, the number of deaths from diarrheal diseases was fully two hundred less than in the preceding week, when, as stated, there were 685 deaths. This was, no doubt, the maximum mortality of the summer, and for this week the general death-rate rose to 28.00. In the corresponding week of last year the maximum mortality of the season was reached, the deaths then numbering 523. Among the diseases which showed an increased fatality were the following: The weekly average of deaths from diarrheal diseases increased from 125 in June, to 503.75 in July; the weekly average from diarrheals under five years of age, from 113.75 to 481.75; from whooping cough, from 9 to 11.75; from cancer, from 54 to 61; and from typhoid fever, from 9.75 to 17. This is the largest mortality from typhoid for a very considerable period. The weekly average of deaths attributed to sunstroke was 5.6, as against 5.5 in July, 1904. The corrected general death-rate (excluding non-residents and infants under one week old) for the month was 22.21, as against 16.28 in June.

Failure to Establish a Tuberculosis Sanatorium. — An effort was recently made to establish a tuberculosis sanatorium at Riverhead, the county town of Suffolk County, Long Island, and at a meeting of the town board held there on July 30 addresses were made in behalf of such an institution, and statistics presented to demonstrate that hospitals for the treatment of tuberculosis are not detrimental to the public health. When the matter was put to a vote, however, there was but a single vote in favor of the proposition, and the member who thus voted is stated to be an undertaker.

Miscellany.

LONGEVITY.

The question how shall a man live to be one hundred years old has been asked by many generations of men. Anciently the belief in extreme longevity was based on Scriptural authority or on the analogy of certain folk-lore traditions according to which some animals, such as crows and deer, attain to immense ages. In the Middle Ages, in fact, the stag was supposed to be capable of living one thousand years, and it required all the acumen of Sir Thomas Browne in his "Popular Errors" to show that deer are not likely to be long-lived and that, as a matter of fact, some thirty to thirty-six years probably mark the span of their existence. Sir Thomas Brpwne argued that there is a certain ratio between the years of growth and those of decline, and at a later date Flourens worked this theory out and concluded that animals have the capacity, as a general rule, of living five times longer than their growing period. "Assuming this," wrote Dr. Protheroe Smith in 1885, "as regards man, on an average, to be twenty-one years (and excluding accidents, diseases of heredity, and unhealthy and unfavorable surroundings and habits), our term of life should be at least one hundred years." The growth of what Dr. Protheroe Smith called spino-pelvic deformity was held by him to shorten life. Accordingly he proposed to keep the pelvis in its "natural oblique plane" by means of a "pelvic band," by which "the pelvic plane is easily restored to the normal angle of 140°" and the viscera are kept in their proper places. It is the displacement of the viscera through loss of the spino-pelvic curve in old age which produces derangement of "the pelvic and the renal organs." These often "give out first in the final struggle to avert the termination of life." The "pelvic band," by keeping everything in place, keeps the human frame youthful despite the advance of years. Dr. Protheroe Smith, in fact, was for the attainment of longevity by the use of an appliance. His was the anatomical view. Sir James Crichton-Browne, on the other hand, is reported to have said recently that improved sanitation and a quiet life would conduce most to the attainment of a measure of existence far exceeding the seventy years spoken of by Moses in Psalm 90. In this view he follows Sir James Sinclair, who wrote on longevity in 1807 and held that it depended chiefly on regimen and favorable external conditions. — *Lancet.*

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JULY 29, 1905.

CITIES.	Population Estimated, 1904.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from					
				Infectious diseases.	Acute lung diseases.	Diphtheria and croup.	Diarrheal Diseases.	Cerebro-spinal Meningitis.
New York	3,908,644	1,564	771	44.82	6.78	.83	30.88	.64
Chicago	1,990,780	518	191	40.54	4.83	1.35	21.62	—
Philadelphia	1,467,363	—	—	—	—	—	—	—
St. Louis	653,606	—	—	—	—	—	—	—
Baltimore	542,229	253	117	45.06	5.14	—	28.85	.40
Cleveland	444,251	—	—	—	—	—	—	—
Buffalo	406,645	—	—	—	—	—	—	—
Pittsburg	362,462	—	—	—	—	—	—	—
Cincinnati	359,377	—	—	—	—	—	—	—
Milwaukee	335,990	—	—	—	—	—	—	—
Washington	300,776	—	—	—	—	—	—	—
Providence	198,744	69	28	31.88	1.45	1.45	20.29	—
Boston	617,890	248	97	34.27	4.44	—	22.18	.40
Worcester	126,295	49	23	33.65	6.12	—	24.49	—
Fall River	119,849	58	36	73.41	5.17	—	62.07	—
Lowell	104,402	49	29	42.86	2.04	—	32.65	—
Cambridge	100,998	25	16	32.00	4.00	—	24.00	4.00
Lynn	78,875	25	9	20.00	—	—	8.00	4.00
Lawrence	72,944	25	14	52.00	—	—	40.00	—
Springfield	73,090	18	9	33.33	—	—	33.33	—
Somerville	70,413	20	9	50.00	10.00	—	40.00	—
New Bedford	68,963	34	23	44.12	—	2.94	35.29	—
Holyoke	50,588	17	7	47.06	—	—	23.53	5.88
Brockton	46,961	6	3	33.33	—	—	33.33	—
Haverhill	39,310	11	5	36.36	9.09	—	27.27	—
Newton	39,061	11	3	36.36	—	—	18.18	—
Salem	37,205	15	6	33.33	6.67	—	33.33	—
Malden	37,188	13	5	23.08	7.69	—	23.08	—
Chelsea	36,429	13	6	23.08	7.69	—	—	7.69
Fitchburg	36,295	9	7	22.22	—	—	—	—
Taunton	34,577	9	6	66.67	11.11	—	66.67	—
Everett	30,369	5	2	20.00	—	—	20.00	—
North Adams	29,201	9	4	11.11	—	—	—	—
Gloucester	26,798	—	—	—	—	—	—	—
Quincy	26,121	7	4	14.29	14.29	—	14.29	—
Waltham	25,797	3	1	—	—	—	—	—
Brookline	25,576	5	1	—	40.00	—	—	—
Pittsfield	23,870	—	—	—	—	—	—	—
Chicopee	21,956	8	6	37.50	12.50	—	37.50	—
Medford	21,693	8	2	20.00	—	—	—	—
Northampton	20,514	3	2	—	—	—	—	—
Beverly	15,807	2	0	50.00	50.00	—	—	—
Clinton	15,711	3	1	—	—	—	—	—
Leominster	15,694	2	0	—	—	—	—	—
Newburyport	14,745	11	5	27.27	9.09	—	18.18	—
Woburn	14,261	—	—	—	—	—	—	—
Hyde Park	14,509	1	1	100.00	—	—	—	—
Adams	14,478	—	—	—	—	—	—	—
Attleboro	14,315	—	—	—	—	—	—	—
Marlboro	13,619	4	0	—	—	—	—	—
Melrose	13,269	6	1	—	—	—	—	—
Westfield	13,771	2	1	50.00	—	—	—	—
Milford	13,609	—	—	—	—	—	—	—
Revere	13,609	0	0	—	—	—	—	—
Framingham	13,274	—	—	—	—	—	—	—
Peabody	12,496	—	—	—	—	—	—	—
Gardner	12,294	4	0	—	—	—	—	—
Weymouth	11,716	1	0	—	—	—	—	—
Southbridge	11,575	4	3	50.00	50.00	—	—	25.00
Watertown	11,350	1	1	—	—	—	—	—
Plymouth	11,139	—	—	—	—	—	—	—

Deaths reported, 3,143; under five years of age, 1,453; principal infectious diseases (smallpox, measles, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 1,320; acute lung diseases 179, consumption 305, scarlet fever 7, whooping cough 30, cerebrospinal meningitis 17, smallpox 0, erysipelas 5, puerperal fever 8, measles 16, typhoid fever 33, diarrheal diseases 877, diphtheria and croup 22.

From whooping cough, New York 13, Chicago 12, Baltimore 2, Boston 1, Fall River 1, Cambridge 1. From scarlet fever, New York 4, Chicago 2, Providence 1. From cerebro-spinal meningitis, New York 10, Baltimore 1, Boston 1, Cambridge 1, Lynn 1, Holyoke 1, Chelsea 1, Southbridge 1. From erysipelas, New York 2, Chicago 2, Boston 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,609,377, for the week ending July 22, 1905, the death-rate was 13.4. Deaths reported 4,002; acute diseases of the respiratory organs (London) 42, whooping cough 45, diphtheria 32, measles 64, smallpox 0, scarlet fever 24.

The death-rate ranged from 3.1 in Hornsey to 24.1 in Bootle; London 12.7, West Ham 13.8, Brighton 11.1, Southampton 10.4, Plymouth 17.5, Bristol 10.3, Birmingham 14.9, Leicester 11.4, Birkenhead 17.5, Liverpool 22.1, Wigan 17.5, Bolton 12.6, Manchester 14.0, Salford 16.4, Halifax 10.8, Bradford 15.3, Leeds 17.8, Hull 13.3, Sheffield 17.2, Newcastle-on-Tyne 11.4, Cardiff 9.6, Rhondda 12.9, Merthyr Tydfil, 18.4, Wallasey 15.0, Oldham 20.5.

METEOROLOGICAL RECORD.

For the week ending July 29, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

DATE	Barometer.	Thermometer.			Relative humidity.		Direction of wind.		Velocity of wind.		Weather*	Rainfall in inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A.M.	8.00 P.M.	Daily mean.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	
S. 22	30.02	64	67	61	82	71	76	E	N E	9	7	O.	O.	T.
M. 24	29.99	66	70	61	82	83	82	E	S	5	8	O.	O.	T.
T. 25	29.90	72	80	64	90	56	73	W	W	6	8	O.	C.	0
W. 26	30.00	70	78	61	58	58	57	W	W	9	9	C.	C.	T.
T. 27	30.04	71	82	60	49	45	47	W	W	14	8	C.	C.	0
F. 28	30.06	73	81	65	53	63	58	W	S	6	8	C.	F.	0
S. 29	29.99	68	73	64	95	95	95	E	E	5	8	O.	O.	T.
Av.	30.00		76	62			70							0

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. Av. Means for the week.

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING AUGUST 5, 1905.

E. M. SHIPP, surgeon. Orders to the "Charleston" revoked; ordered to the Navy Yard, New York, N. Y.

J. F. LEYS and J. C. THOMPSON, surgeons. Commissioned surgeons, with rank of lieutenant-commander, from March 3, 1903.

F. M. FURLONG, passed assistant surgeon. Ordered to the Bureau of Medicine and Surgery, Navy Department.

P. T. DESSEZ, assistant surgeon. Ordered to the "Charleston."

R. E. LEDBETTER, passed assistant surgeon. Detached from the "Detroit," and ordered to the Naval Hospital, Boston, Mass.

J. C. WISE, medical director. Detached from duty as a member of the Naval Medical Examining Board and Naval Retiring Board, Washington, D. C., Aug. 10, and ordered to duty as president of the Naval Medical Examining Board, Naval Medical School, and to command the Naval Medical School.

R. A. MARMION, medical director. Detached from duty as president of the Naval Medical Examining Board, Naval Medical School, Washington, D. C., and from command of the Naval Medical School, and ordered to duty as a member of the Naval Medical Examining Board and Naval Retiring Board, Mills Building, Washington, D. C.

C. B. MUNGER, assistant surgeon. Ordered to the Naval Hospital, Norfolk, Va.

E. R. MARSHALL, assistant surgeon. Ordered to the Naval Hospital, Washington, D. C.

H. A. MAY, assistant surgeon. Detached from the "Franklin," and ordered to the "Iowa."

F. E. SELLERS, acting assistant surgeon. Ordered to the "Franklin."

U. R. WEBB, passed assistant surgeon. Detached from the Bureau of Medicine and Surgery, Navy Department, and ordered to the Naval Academy.

B. F. JENNESS, assistant surgeon. Detached from the "Iowa" and ordered home to wait orders.

H. W. COLE, assistant surgeon. Orders of July 31, modified; ordered to the "Maine."

RECENT DEATHS.

ROBERT FOWLER BRATTIE, M.D., M.R.S.S., of Brookline, died Aug. 6, 1905, aged thirty-five years.

DR. ROBERT MAITLAND PETRIE, one of the leading physicians of Jersey City, N. J., died on Aug. 3. He was the son of the Rev. Dr. Petrie, and was born at Liberty, N. Y., in 1845. His collegiate education was completed at Princeton, and he was graduated from the medical department of the University of Pennsylvania in 1869. He was especially esteemed as a consultant in cardiac diseases.

Address.

SOME PROBLEMS OF INTERMEDIARY METABOLISM.*

BY RUSSELL H. CHITTENDEN, PH.D., OF NEW HAVEN, CONN.

It requires little imagination and little knowledge of physiology to comprehend that upon a true understanding and rightful interpretation of the many and varied metabolic phenomena of the body depends in large measure the accuracy of our knowledge of the processes of life, both in health and in disease. Yet as Sir Michael Foster has clearly pointed out, it is wholly impossible at present to make any connected or continuous story of the metabolic changes undergone by the individual constituents of the food, the body or the waste products. In the chain of events from the assimilation of the digested food materials by the hungry tissues down to the elimination of the final waste products by the kidneys, lungs and skin are many broken and missing links by which the continuity of the story is destroyed and we are compelled to fill the gaps by guesses and conjectures, too often widely divergent from the truth.

The very existence of these gaps and breaks in our knowledge, however, serves as an ever-present stimulus inciting renewed activity in the search for truth and enlightenment. As is often the case, this search brings added complexity by opening up vistas that were not supposed to exist, and our thoughts and our experiments take a new turn, from time to time, as additional facts are brought to the surface, with a suggestion of new methods of interpretation. Advances are constantly being made; old views are undergoing modifications or are entirely supplanted by new theories, the result of steady progress in knowledge. The gaps and breaks in the chain of events that represents the processes of life are being slowly filled in, but new gaps make their appearance, demanding additional knowledge before we can hope for a perfect understanding of the many and varied steps in the metabolic transformations characteristic of living tissues.

As has been so clearly expressed by many writers, we need full knowledge of *all* the steps in the building up and breaking down of the tissue materials, with full consciousness of the fact that a large majority of the diseases of the body are the result of a perversion of metabolism. Further, we realize full well that it is equally important to possess knowledge of *where* these individual steps in metabolism are located, if we are to have full comprehension of the true functional activity of the individual organs and tissues of the body. We need to know the exact nature of each link in the chain of events, and where each link lies with reference to the other links of the chain. The many degenerative changes that check the activities of man at a time when he should be in the full vigor of life we frequently say are due to the disorders of metabolism or nutrition, recognizing perhaps full well the general character of the perversion, but with no adequate conception of exactly what has occurred or what should be done to remedy or prevent. We lack knowledge of the intermediary steps in metabolism, in health and in disease, and if we are to interpret aright the conditions that bring about disease, to say nothing of prevention and cure, we must acquire full understanding of the processes of intermediary metabolism, their relationship to each other, their general and specific character and the influences that control their harmonious working.

As has just been stated, many of the gaps and breaks in our knowledge of metabolism have been filled up, new facts have been brought to light, new suggestions have been made, and our knowledge has been correspondingly increased. It has, therefore, seemed to me that I could not better fulfill the purpose of the Shattuck lecture than to present to you some of these problems of intermediary metabolism which of late have been under consideration and for which we have now a partial or complete solution.

Every active tissue of the body, every glandular organ, every individual living cell is the seat of incessant chemical activity; construction and destruction are going on side by side, new food materials — protcids, fats and carbohydrates, together with inorganic salts, water and oxygen — are continually being supplied, and passing into the cells of the various tissues or organs are eventually built up into the tissue material, or are made more or less completely adherent. Simultaneously, the cell substance or the adherent materials are undergoing characteristic changes. Secreting gland cells are manufacturing enzyme antecedents and storing them up in the cells for future use, or are perhaps pouring the products forth in slightly altered form to give character to the glandular secretion. Other gland cells are elaborating specific products, such as bile acids, glycogen, amido-acids of various kinds, internal secretions to be re-absorbed by the blood and serve some purpose elsewhere in the body; decompositions of great variety are being carried on, and complex substances are being broken down into simpler with liberation of energy, manifest in the form of heat or mechanical work. And so we have from every group of individualized cells in the body a more or less continuous stream of katabolic products, representatives of the destructive changes taking place in the cells of the individual tissues or organs. Further complexity is introduced by the fact that a given set of cells may show many different lines of activity. Thus, the hepatic cells not only manufacture bile acids and bile pigments, but they likewise produce glycogen from sugar and transform sugar into glycogen, they form urea from various amido-acids and ammonia, they bring about the construction and destruction of uric acid, they decompose the hemoglobin of the blood and withdraw the iron from the hematin molecule to manufacture bilirubin, they bring about combinations between sulphuric acid and

* Delivered before The Massachusetts Medical Society, June 13, 1905.

certain aromatic substances such as phenol; in a word, they are active in carrying forward a great variety of divergent processes in which oxidation, hydration and dehydration are equally conspicuous.

These processes of metabolism may be viewed from the standpoint of ultimate changes, without regard to the few or many intermediary steps in the process. Thus, the physiologist may study, for example, the extent to which the formation of urea goes on in the body under different conditions of diet, etc., and he may acquire much useful information regarding the rate of proteid katabolism, without, however, learning much or anything of the various intermediary steps in the process by which the urea is elaborated from the proteid of the food or of the tissues. It is obvious that we can acquire full and exact knowledge of the way in which urea is formed only by searching out the successive changes that take place from the primary breaking down of the proteid to the ultimate formation of urea; *i. e.*, by studying the intermediary processes of proteid katabolism.

In any consideration of intermediary metabolism, where of necessity the action of specialized groups of cells — as in individual tissues and organs — is involved, we are at once confronted with the general question as to how the processes of destructive decomposition are accomplished. In what manner and by what agencies are the processes of katabolism carried out? Until recent times we have had no logical answer to this question. Physiologists and biologists long held that the processes going on in living tissues were of far too complicated a nature to admit of explanation by chemical or physical means. Schöbein, for example, maintained that the exact sciences were not sufficiently developed to render possible any exact analysis of the changes taking place in living cells. It was the fashion to assume that it was the functional activity of the living cell as a whole that made possible the chemical changes characteristic of the tissue or gland. Cell activity was considered as the result of an inherent quality of the living protoplasm, and no one agent or definite substance could he held responsible for this activity. The theories of vitalism held the physiologist in a strong grasp. Even when ferments or enzymes gained gradual recognition, their action was considered as purely extra-cellular, and they were not looked upon as playing any special part in metabolism. In digestion, of course, their action was manifest, but it was wholly extracellular, though their origin was intra-cellular.

Living cells produced enzymes for certain purposes, but there was no evidence that the ordinary processes of katabolism with which the cells might be involved were connected in any way with ferment or enzyme action. Until very recent times, the yeast cell was taken as a typical example of the then point of view. It produced an inverting ferment which could be extracted from the cell and which was very efficient in inverting cane sugar, but the peculiar property of the yeast cell, *i. e.*, the formation of carbon dioxide and alcohol, was the result of the activity of the cell as a whole. It was considered as due to an inherent quality of the living protoplasm. This view prevailed until a few years ago, when Hans Buchner showed that it was quite possible to press out of the yeast cell a clear fluid which, freed from all cellular elements, would still cause alcoholic fermentation. Still later, an enzyme was isolated — zymase — which breaks down sugar into alcohol and carbon dioxide quite as effectively as the yeast cell itself. In other words, we have learned that this so-called vital property of the yeast cell is due entirely to an intra-cellular ferment or enzyme which the cell manufactures.

In the animal body the processes of metabolism as judged from the number and variety of products formed are many and varied. It has been customary to classify these chemical processes under the heads of hydrolytic cleavage, oxidation, reduction, synthesis, etc., and to-day we are in a position to affirm that intra-cellular ferments are the responsible agents in bringing about these varied processes of metabolism in the individual organs and tissues of the body. There is practically no process of metabolism so intricate or obscure that it cannot well be explained by the action and interaction of intra-cellular ferments. New ferments are constantly being discovered, new chemical reactions are being traced to the power of special ferments, and we now speak with great detail of the various *autolytic* changes that different glands and organs undergo, when simply warmed at 40° C. under antiseptic precautions, because of the action of intra-cellular ferments which are practically present in all tissues.

Proteolytic ferments of the trypsin, or of the newly discovered erepsin, type are present in most, if not all, of the tissues of the body. Muscle liver, kidneys, lymph glands, lungs, spleen, etc. all contain proteid-dissolving ferments, and when the tissues are subjected to auto-digestion or autolysis, such products as the amido-acids, leucin, and tyrosin, tryptophan, glycocoll, hexone bases or diamino-acids, and ammonia result from the breaking down of the various proteids of the tissue. In this connection it is to be noted that the respective proteids of the individual tissues are much more quickly affected by these ferments than are foreign proteids, thus suggesting that these intra-cellular enzymes are somewhat different in nature from the ordinary proteolytic enzymes of the digestive juices. Further, there are peculiar ferments that act specifically upon the intra-cellular nucleoproteids, splitting off the nucleic acid complex from the proteid part of the molecule, and still other ferments that bring about a cleavage of the nucleic acid with liberation of the contained purin bases. Lastly, it may be said that the general trend of action with these intra-cellular proteolytic ferments is hydrolytic cleavage, much the same as the influence exerted by mineral acids or by ordinary digestive enzymes.

Other types of intra-cellular ferments exercising hydrolytic action accompanied by cleavage are to be found in lipases, true adipolytic ferments

which split neutral fats into glycerin and fatty acids in a fashon quite analogous to the action of ordinary steapsin. These lipases are found in the liver and other organs. Further, the kidneys and liver contain a ferment capable of splitting hippuric acid into benzoic acid and glycocoll (Schmiedeberg). Again, Jacoby has shown that the liver will yield an extract capable of splitting off ammonia from urea, and that the same gland contains a ferment capable of transforming amido-acids into amides. Moreover, the liver and indeed the kidneys as well have the power of splitting up amides; a fact of the utmost importance in intermediary metabolism. Lastly, glycolytic action, in which both cleavage and oxidation of sugars may be involved, is likewise a function of many cells, and adds another striking illustration of intra-cellular ferment action, by which carbohydrate metabolism may be carried forward in the different tissues and organs of the body.

Oxidation is pre-eminently one of Nature's ways of bringing about alteration and decomposition, and in intermediary metabolism especially oxidative processes must be quite conspicuous. Yet to-day we have accumulated a mass of evidence tending to show that oxidation in the tissues is due primarily to the presence and action of a row of more or less closely related though chemically distinct ferments, known collectively as oxidases. Physiological oxidation therefore, as it occurs in metabolism, is likewise a result of intra-cellular ferment action. To be sure, the blood is the carrier to the tissue cells of the necessary oxygen, but the process of oxidation, with such chemical reactions as is involved, is due to the action of the intra-cellular oxidases. It is well to recall that Schönbein originally drew attention to the fact that the blood, and tissues as well, had the power when fresh of splitting off oxygen from hydrogen peroxide, but lost the power when heated to 90–100°. This phenomenon, however, is not, as was at one time thought, simply a general ferment indicator, but is due to the action of specific oxidases, some of which can actually be precipitated from the fluids containing them, and moreover differ among themselves as to the degree in which they are distributed among the different tissues and organs of the body. The spleen, liver, pancreas, thymus, muscle, brain and ovaries are noticeably rich in oxidizing ferment. In fact, the physiologist to-day has knowledge of a large number of intra-cellular oxidases, more or less distinct from each other, to some of which distinct names have been given indicative of their special lines of activity, viz., *aldehydase*, a ferment which oxidizes aldehydes to their corresponding acids, and present in the liver, kidneys, testicles, suprarenals, brain, lungs, thymus and salivary glands; *tyrosinase*, a ferment which oxidizes benzol derivatives, especially tyrosin; and *indolphenol-oxidase*, a corresponding ferment present in the pancreas, thymus, spleen, and salivary glands, but absent from the muscle and kidneys.

As can easily be imagined, these facts throw new light upon the methods of intermediary metabolism. They show us that the individual gland and tissue cells are provided with efficient agents for accomplishing chemical changes of great variety. We are no longer forced to think or speak in vague terms of the somewhat mystical changes that go on in living tissues, but we have acquired sufficient knowledge to understand that the individual cells of the body are provided with intra-cellular ferments of definite character by which the metabolic changes are produced. These newly discovered enzymes are of such widely divergent nature and so broadly distributed among the tissues of the body that they offer an adequate explanation of the many chemical changes that occur in ordinary metabolic processes. Further, when it is remembered that practically all tissue cells contain proteolytic enzymes capable of transforming their own proteids into simpler products, and that in addition they have special enzymes endowed with a variety of powers, we see opening before us simple chemical methods of tracing out the individual steps in the gradual breaking down of the complex molecules of tissue material into the relatively simple bodies which we classify as intermediate and end products of tissue metabolism.

Let us now consider more in detail, and from the standpoint of what has already been said, some specific examples of intermediary metabolism. By the older methods of investigation, the physiologist was compelled to rely mainly for information upon such data as could be obtained by careful study of the urine, reinforced by examination of the individual glands and tissues. The detection in the latter of specific products led to the inference that these substances were formed in the glands under examination, but it was purely a question of inference as to how and from what the bodies originated. Further, if the urine showed the absence of these same bodies, then we naturally inferred that they were either completely destroyed or transformed into some other body, the methods of which were likewise enigmatical. The gaps and guesses of Foster were met with at every turn in any attempt to trace out systematically the changes of intermediary metabolism.

Modern methods and recent acquirements in knowledge are both well illustrated in what has been accomplished in the study of purin metabolism. Nucleoproteids of various kinds are conspicuous constituents of all cells; they are found in all tissues, in all glandular organs, and their widespread distribution may be taken as evidence of their great physiological importance. Their metabolism must of necessity be a conspicuous feature in the changes taking place in all glandular organs. Chemical study has shown that nucleoproteids by simple hydrolysis with mineral acids in a flask can be broken down into some form of proteid, phosphoric acid and one or more purin bases, such as adenin, guanin, xanthin and hypoxanthin. Further, chemical constitution would lead to the inference, verified by repeated experiment, that these purin bodies can

be readily converted into uric acid. Do such reactions take place in the body; and, if so, by what agencies are they brought about?

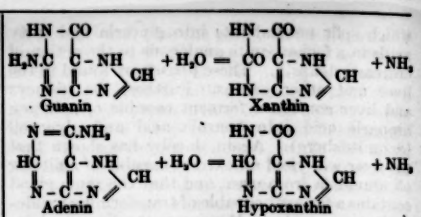
If such glands as the thymus, suprarenal, spleen etc., are subjected for some time to self-digestion at body-temperature in the presence of an antiseptic, it can readily be demonstrated that certain chemical changes occur. Thus, in the case of the thymus, large amounts of xanthin and a small amount of hypoxanthin, together with uracil, are found in the fluid. With the suprarenal, large quantities of xanthin and a small quantity of hypoxanthin are found.[1] With both of these glands, however, guanin and adenin are entirely lacking. In the self-digestion of the spleen, on the other hand, guanin is formed abundantly, also hypoxanthin, while adenin and xanthin are wanting. These results are quite different from what is found when the glands or their respective nucleoproteids are boiled with acid. In other words, when mineral acids are used as the hydrolyzing agents, then the tissue nucleoproteids yield, as a rule, guanin and adenin, but by autolysis xanthin and hypoxanthin are the conspicuous bases.[2] This difference in the result by hydrolysis with acid and by autolysis is due to the fact that in autolysis the changes induced are owing to the presence of specific intra-cellular ferments,[3] which have the power of acting upon certain of the purin bodies transforming them into other related substances.

Thus, in the self-digestion of the pancreas in an alkaline medium large amounts of xanthin and hypoxanthin are found as the end products of the autolysis. Guanin and adenin are no doubt also formed, but they are gradually converted into xanthin and hypoxanthin by intra-cellular ferments. If pure guanin itself is placed in a mixture containing finely divided pancreas, with chloroform to prevent putrefaction, and the mixture kept at 40° C. for some time, the guanin is slowly but surely converted into xanthin, until in time it is wholly replaced by the latter base. The ferment or enzyme that brings about this transformation is called *guanase*,[4] and is likewise present in the thymus and adrenals, but is absent from the spleen. A corresponding intra-cellular enzyme, known as *adenase*, and which transforms adenin into hypoxanthin, is likewise present in the thymus, adrenals, pancreas and liver.[5] These two ferments are true hydrolyzing agents, the chemical reactions involved being quite simple:

$$\underset{\text{Guanin}}{C_5H_5N_5O} + H_2O = \underset{\text{Xanthin}}{C_5H_4N_4O_2} + NH_3$$

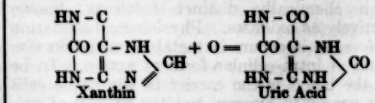
$$\underset{\text{Adenin}}{C_5H_5N_5} + H_2O = \underset{\text{Hypoxanthin}}{C_5H_4N_4O} + NH_3$$

In both of these cases it is to be noted that there is not only a taking on of water, under the influence of the enzyme, with a retention of the oxygen, but there is also a giving off of ammonia, by which the transformation is made possible. The real essence of the reaction is best shown by use of the constitutional formulæ, whereby can be seen the full extent of the change which is effected:



Expressed in different language, these enzymes are able to transform the two amino-purins into the corresponding oxypurins xanthin and hypoxanthin; *i. e.*, they are typical deamidizing ferments, destroying the NH_2 group of the adenin and guanin.

Again, it is possible, as Schittenhelm[6] has shown, to prepare from the spleen simple extracts, free from all tissue elements, that are capable of transforming these purin bodies into uric acid. From such extracts the enzyme, which is the active agent in the oxidation, can be separated by simple chemical means, and the purin bases can be transformed quantitatively into uric acid by its action. The conversion of xanthin, for example, into uric acid is purely a process of oxidation brought about by a typical intracellular oxidase, the reaction being as follows:



Schittenhelm[7] has already demonstrated that this oxidizing enzyme is present in the liver, spleen, lungs and muscle, but is absent from the thymus, intestine, blood and kidneys, and Burian has given to the ferment the name of "xanthin-oxidase."

Another interesting fact to be brought forward in this connection is the existence of a specific intra-cellular enzyme appropriately termed *nuclease*, which has the power of liberating the purin bases from their combination as a component part of tissue nucleoproteids, or more specifically of the contained nucleic acids. It has long been known that nucleoproteids, nucleins and nucleic acid when fed cause at once an increased output of uric acid, and it has been clearly recognized that uric acid as a product of metabolism must result from the transformation of the nuclein vases which are so conspicuous in the nucleins and nucleic acid; but as to how the uric acid was formed in the body could only be conjectured. Now, however, the matter is made quite clear, and we see how various intra-cellular enzymes working one after the other are able gradually to evolve uric acid from tissue nucleoproteids. Under the influence of a *nuclease*, nucleic acid is split up with liberation of the free nuclein bases, then by the action of a deamidizing enzyme guanin and adenin are transformed into xanthin and hypoxanthin respectively. Further, by the action of the oxidase just referred to, hypoxan-

thin is oxidized to xanthin, and the latter is converted into uric acid. Moreover, it is worthy of emphasis that these enzymes are not distributed indiscriminately, but are confined to specific organs or tissues, as has already been indicated. Finally, it is to be noted that there is another tissue oxidase — contained so far as is known at present in the kidneys, liver, muscle, and perhaps the marrow of bones (Schittenhelm) — which has the power of oxidizing and thus destroying uric acid. Here, then, we have four distinct enzymes or intra-cellular ferments, more or less responsible agents for the production and presence of uric acid in the body. The various steps in the intermediary metabolism, by which this substance results are made quite clear and we see how specific intra-cellular enzymes, formed by the tissue cells, are responsible for the chemical changes induced.

By all students of metabolism the twofold origin of uric acid — endogenous and exogenous — is well understood. It is equally well known that in the origin of uric acid from outside materials free and combined purin compounds are equally effective; *i. e.*, nuclein-containing foods and nitrogenous extractives of the xanthin type. By the processes of metabolism, in which the intracellular enzymes referred to are the active agents, uric acid is formed, and eventually appears in the urine. It is evident, however, that exogenous uric acid cannot be controlled wholly by the character and quantity of the food consumed. To be sure, avoidance of purin-containing foods will necessarily result in a greatly diminished production of uric acid, but we must not overlook the part which the uric acid-oxidizing ferment plays in the destruction of this substance in the tissues of the body. As has already been pointed out, this peculiar oxidase has been found by Schittenhelm in the liver, muscle, kidneys, and perhaps in the bone marrow, and it is easy to see how the content of uric acid in the blood, lymph and urine may be determined as much by the relative activity of this oxidase as by the activity of the nuclease, amidase and oxidase which produce uric acid from the purin-containing foods. It is perfectly clear that inhibition of the oxidizing action of the uric acid-destroying enzyme may be as effective in bringing about a high content of uric acid as increased production of uric acid. We have no means at present of judging the relative activity, under normal metabolic conditions, of these two somewhat divergent factors, but I believe that the conspicuous increase of uric acid noticed under many conditions of life is due as much or more to increased inhibition of the oxidation of uric acid as to augmented production of uric acid. This is conspicuously true in the influence exerted by alcoholic drinks on the uric acid-content of the blood and urine.

Recent work carried on in the writer's laboratory [9] has shown quite conclusively that in man the ingestion of alcoholic fluids with purin-containing foods increases at once the output of uric acid in the urine. Alcohol, however, does not produce this result when taken with a light diet or one free from purin compounds. In other words, alcohol influences only the uric acid of exogenous origin, in conformity with the well-known gouty tendencies of high proteid feeding combined with consumption of alcoholic fluids. Alcohol is well understood to interfere with the oxidative processes of the liver, and it is more than probable that its influence on the uric acid content of the blood lies in the direction of inhibiting the action of the oxidase which, present in the liver and other tissues, normally destroys or oxidizes a certain proportion of the uric acid formed. This being true, we see another illustration of so-called perverted metabolism due entirely to a change in the rate of action of an intra-cellular oxidase.

In any reference to the origin of uric acid in the body, too much stress cannot be laid upon the easy convertibility of the *free* purin bases adenin, guanin, hypoxanthin and xanthin into uric acid [9] by virtue of the action of the intra-cellular enzymes present in so many of the organs and tissues. In the ordinary foodstuffs, however, as in meat broth, it is the oxypurins hypoxanthin and xanthin that the body has to deal with mainly. These are quickly oxidized to uric acid which may then be excreted, or a portion may undergo oxidation to urea or other products. When, on the other hand, combined purins are introduced, as in the nucleins and nucleoproteids, adenin and guanin are liberated by the action of nuclease. These bodies are amino-purins, and their continuance unchanged depends upon the presence and action of the two enzymes adenase and guanese. If the latter are present and active in normal degree, we can conceive of a ready conversion into hypoxanthin and xanthin and then into uric acid. But if these enzymes are lacking or are inhibited in their action, then the two amino-purins will float about unaltered for a time at least. May we not find in this possibility an explanation for certain disturbed conditions of the body, especially of the kidneys, since experiments have shown that adenin in the case of dogs,[10] and in rabbits [11] when larger doses are given, is liable to produce anatomical alterations in the kidneys, particularly of the tubules, accompanied by peculiar deposits in the kidney tissue of spheroliths of uric acid and ammonium urate, which evidently cause irritation and marked alterations of structure? Here, again, we see suggested a threatened perversion of metabolism through possible absence or inhibition of an intra-cellular enzyme.

Uric acid of endogenous origin is as much a product of enzyme action as that which is derived from the purin compounds of the ingested food. It is well known that the elimination of uric acid does not cease during fasting, or with a diet free from purin compounds. The amount, however, is greatly reduced when purin-containing foods are excluded from the diet. Many investigators [12] have shown experimentally that there is a certain degree of constancy in the output of uric acid on

a non-purin diet, even when there are wide variations in the quality and quantity of the purin-free food. Various careful experiments, covering fairly long periods of time, carried on in our laboratory by Dr. E. W. Rockwood [13] on men taking only purin-free food, such as milk, wheat bread, butter, cheese, cereal, fruit, etc., showed a daily output of uric acid averaging 0.3 — 0.4 gr. Further, it was observed, in conformity with the thesis of Burian and Schur, that a given individual shows a certain degree of constancy in the daily excretion of uric acid. In other words, the elimination of endogenous uric acid is constant for each individual; *i. e.*, it is an individual factor dependent perhaps in part upon the weight of the body or the contained tissues and organs. It was a noticeable fact that the results obtained were not influenced in any measureable degree by the extent of muscular activity.

As to the origin of this endogenous uric acid, it has long been taken for granted that it must come in part from the breaking down or metabolism of the nucleoproteids of the tissue cells, by the action of the same agencies that are effective in the formation of exogenous uric acid. There are, however, other possible methods not to be entirely overlooked; viz., the possibility of a synthetical production of the acid in the liver or elsewhere, and also the possibility of some other antecedent than the nucleoproteids of the glandular organs, leucocytes, etc., serving as the direct mother substance in its formation. Knowing the fate of the nucleoproteids of the food and the marked influence these exert upon the elimination of uric acid, reinforced by the abundant experimental evidence that both free and combined purin bases when ingested are transformed into uric acid, there has been little question that the endogenous uric acid must be derived from the breaking down of the nucleoproteids of the tissue cells. Indeed, there has been some disposition to take the amount of endogenous uric acid eliminated as a measure of the chemical activity or disintegration of tissue elements. This view, however, has quite recently received a severe shock in the results of some experiments recorded by Burian,[14] in which he shows quite conclusively that only a very small amount of the endogenous uric acid has its origin in the nucleoproteids of disintegrating tissue cells or leucocytes, the larger part coming from quite a different source, viz., from the purin base hypoxanthin, which is continually being formed as a metabolic product of living muscle tissues. Still, as already stated, muscular work, which naturally means increased muscular metabolism, has not appeared to cause any measurable increase in the output of uric acid. This may be true, according to Burian, with the twenty-four hours' urine, but it is not the case when the urine is examined in hourly periods, for he finds that after vigorous muscular exercise in the case of fasting individuals, where the hourly excretion of uric acid is fairly constant, there is a marked increase in the output of uric acid through the urine, the maximum excretion showing itself in the second hour after cessation of the work, enduring for an hour or longer, then slowly sinking below the normal. This fall in the rate of excretion thus balances in a measure the temporary increase, and explains why examination of the twenty-four hours' urine has failed to afford evidence of this peculiar influence.

This observation of Burian renders probable an intimate relationship between muscle metabolism, the formation or liberation of a purin base in the muscle, and its consequent conversion into uric acid by the intra-cellular xanthinoxidase. Further, the same investigator has shown that by perfusing a mixture of Ringer's solution and fresh dog's blood through the hind leg of a recently killed dog, the muscle fibers being maintained in a state of rest, the blood will gradually show the presence of uric acid; while if the muscles are stimulated by an induction current for an hour or so, then the circulating blood shows an increase of purin material, and the living muscle tissue itself shows an increased content of hypoxanthin during the period of "work." It is obvious from these statements tha the muscle or the blood must contain xanthinoxidase to convert the liberated oxypurin into uric acid. This is indeed true of the muscle, for an extract of dog's muscle, like an extract of the liver or spleen, will transform to uric acid any oxypurin added, thus affording satisfactory proof that the muscle contains a specific intra-cellular oxidase. Further, there is evidence that the muscle also possesses the power of decomposing uric acid.

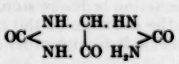
There is thus opened up a new chapter in purin metabolism, bearing upon the endogenous production of uric acid. In the resting state muscle is continually giving up to the blood a certain amount of uric acid formed at the expense of the hypoxanthin which originates within its own tissue. The oxidation of the purin base to uric acid is accomplished by the specific oxidase which the muscle itself contains, but, as Burian points out, this enzyme must be so located that the hypoxanthin is converted into uric acid just as it is passing from the muscle fibre into the blood or lymph, since muscle itself never contains any uric acid, only purin base. Further, it is to be understood that a certain amount of the uric acid is at once decomposed by the action of the other oxidizing ferment which destroys this acid. Finally, Burian calls attention to the fact that since the hypoxanthin-content of the muscles, in spite of the continuous formation and withdrawal of uric acid, remains in general constant, it follows necessarily that muscles during rest are continually forming new hypoxanthin as a normal product of their own metabolism. During activity, the formation of hypoxanthin in muscle is accelerated, while at the same time there is a corresponding increase in the output of the purin body from the muscle, the action of the xanthinoxidase being doubtless stimulated by the local deficiency of oxygen concomitant with the increased muscular activity, and as a final result there is an increased production of uric acid. What proportion of the thus formed uric acid

appears in the urine we have at present no definite information, for we do not know in what degree the formed acid is further decomposed.

Assuming the corectness of the views just expressed, it is evident that muscle tissue takes a new position in the body as a uric acid-producing center. The tissue, it is true, does not differ from other tissues or organs as a depot for the specific oxidase, but, unlike the other tissues, it is constantly producing, both in rest and in activity, an oxypurin ready for direct transformation. In the other uric acid-producing centers, activity is more or less intermittent, being dependent primarily upon the advent in the food of free or combined purin bodies upon which the intra-cellular amidases and oxidases can act. Burian considers, on the strength of his experimental results, that endogenous uric acid owes its origin mainly to these metabolic changes in muscle, and that only a very small proportion of the endogenous acid is derived from the nucleoproteids of the disintegrating tissue cells. Again, experimental evidence [15] is strongly opposed to the view that there is any synthetical production of uric acid in the animal body; the only way at present known in which the exogenous uric acid can be increased in amount being feeding with free purin bases or with nucleoproteid-containing foods in which combined purin bodies are present. In other words, uric acid owes its origin entirely to processes of enzymatic oxidation.

We may advantageously pause here for a moment to consider the possible bearing of these facts upon so-called oxidation within the body. We have seen how, in the processes discussed, oxidation is dependent upon specific ferments or enzymes, and we further understand that the intermediary products formed are definite bodies because of the specific nature of the active enzymes, and, secondly, because of the chemical nature of the substances acted upon. In other words, oxidation in intermediary metabolism begins to take on the shape of a series of well-defined chemical processes in which chemical constitution and specific enzyme action are the predetermining causes. In the absence of the particular chemical groups, the oxidase is ineffective to bring about oxidation, or, given the proper compound or mother substance in the absence of the specific oxidase, there is no oxidation. Oxidation in the animal body, therefore, certainly as applied to intermediary metabolism, is no longer to be classed with ordinary combustion processes. We find, on the contrary, a series of orderly chemical processes, each one of which is presided over by an intra-cellular enzyme, specific in its nature in that it is capable of acting only upon bodies having a certain definite composition, and leading invariably to a certain definite result. Further, it is easy to see how perversion or inhibition of intermediary metabolism may be engendered by causes which act primarily upon the cells where the enzymes in question have their origin, or by influences which may bring about changes in the environment surrounding the intra-cellular ferment; for just as the ordinary extra-cellular digestive enzymes are influenced in their activity by surrounding conditions, so may the intra-cellular oxidative enzymes feel the effect of changes in their environment.

In enzyme action in general, maximum results are obtained only when the enzyme and the substance to be acted upon bear a certain definite relationship to each other. A proportionate excess of one over the other may modify the rate of action, and where the substance undergoing change — in intermediary oxidation — is in relative excess over the enzyme there would seem suggested the possibility of a perversion of the normal oxidative change. In such a case as this, some intermediary body — perhaps abnormal in nature — might make its appearance. This principle in metabolism is well illustrated by some recent experiments carried on in our laboratory [16] bearing on the formation and excretion of allantoin in the animal body. Allantoin is an oxidation product of uric acid, having the formula:



It is found in the urine of pregnant women and in the urine of newly born infants. It is likewise excreted in large quantities by dogs after feeding pancreas, thymus, lymphatic glands, or any other material rich in nucleic acid. It is also appears in the urine of the dog and cat after feeding relatively large amounts of uric acid. In other words, it is quite evident from the experimental records that in the case of these animals at least the purin bases (and nucleins) may give rise, under some conditions, to allantoin as an intermediate product of their oxidation. Ordinarily, these compounds of the purin type are more completely oxidized in the system, with formation of urea, although, as we have seen, a certain proportion of the nitrogen is excreted as uric acid. But when larger quantities per kilo of body weight of uric acid, or of the antecedent purin compounds, are introduced or formed in the system, the oxidative enzymes are unable to bring about as complete a decomposition of the purin radicles, and under such conditions allantoin escapes as an end product of the incomplete oxidation of the acid.

Drugs that are known to influence certain lines of metabolic activity in which the purin bodies are concerned may well have their action explained by assuming an influence upon enzymatic oxidation, as well as by attributing the effect to some general disturbance of functional activity of the gland or tissues. Further, with this mode of explanation at hand, it is easier to understand how drugs that bring about marked pathological conditions may still be free from influence upon some of the lines of functional activity with which the gland or tissue is associated. Thus, as some experiments recently carried on in our laboratory show,[17] phosphorus, which produces such marked hepatic degeneration, does not interfere in the case of the dog with

the power to elaborate uric acid during a diet rich in purin compounds. In other words, the specific nuclease, amidase and xanthinoxidase are not inhibited in their action by the presence or influence of phosphorus, but uric acid is formed as under normal conditions when purin-containing foods are exhibited. Further, other experiments [18] made in our laboratory with sulphonal, a typical hepatic drug, tend to show that in fasting dogs there is no undue formation of allantoin when soluble urates are injected into the circulation, *i. e.*, the normal uric-acid oxidation is not interfered with, even though the animal be strongly under the influence of the drug. When, however, animals fed on pancreas, *i. e.*, with an abundance of nucleoproteid, are treated with sulphonal, then it is found that allantoin, which on the above diet would normally appear in large amounts, is never present in the urine. Presumably, the sulphonal in some way influences favorably the oxidation of the purin compounds to uric acid and urea, and it is as reasonable to assume that this action is due to some stimulating influence upon the oxidases of the liver or other glands as to ascribe it to any other more general cause.

We must not, however, confine our attention too long to one particular line of intermediary metabolism, remembering that there are many other chapters in nutrition to which attention may profitably be directed, in illustration of our main theme. Let us, therefore, consider next some phases of the intermediary metabolism of carbohydrates and its perversions, which will afford us opportunity also to discuss the formation of oxalic acid, glycuronic acid, etc. It is well understood that, under ordinary conditions of life and health, the carbohydrates of our food and body tissues are continually undergoing oxidation with ultimate formation of carbon dioxide and water, but it is not to be supposed that this oxidation necessarily takes place wholly at one step. In the blood, as Lépine [19] originally pointed out, there is present a glycolytic ferment or enzyme which has the power of destroying sugar, but as Krauss [20] and Arthus [21] have shown, this action of the blood is not sufficiently strong to bring about the oxidation of the several hundred grams of sugar that are being broken down in the body each day. The discovery by v. Mering [22] and Minkowski that extirpation of the pancreas produces a severe form of diabetes led naturally to the view that this organ normally produces something, possibly an internal secretion, failure of which renders the body unable to burn sugar. Search for the presence of a glycolytic ferment in the pancreas, however, gave negative results.[23] It remained for Cohnheim [24] to show that when the pancreas is combined with muscle there is developed a strong sugar-decomposing action. The pancreas alone has no such power, and muscle likewise, when taken by itself, shows no appreciable glycolytic action, but the two together have such power that 5.6 gm. of sugar can be destroyed or burned by a kilogram of muscle. If, says Cohnheim, we estimate that an adult man possesses 40 kg. of muscle, this tissue influenced by the action of the pancreas is quite capable of oxidizing over 200 gm. of dextrose.

This oxidizing power is not dependent upon the presence of the tissue cells, but the active agent can be extracted and the resultant cell-free fluid shows the same power of oxidizing dextrose, thus signifying quite clearly that the agent is a soluble enzyme or ferment which presumably resides in the muscle tissue in an antecedent form and is activated through some influence exerted by the pancreas. The action is thus analogous to the influence exerted by the *enterokinase* of the intestinal glands, which has the power of transforming inactive trypsinogen into the active enzyme trypsin, the proteolytic enzyme of the pancreatic juice. It is true that these results of Cohnheim have been adversely criticized by some investigators, notably by Stoklasa and by Claus and Embden, but nevertheless the general trend of the results seems pretty clearly established, and it appears evident that glycolytic action, which undoubtedly occurs in most, if not all, of the active tissues of the body, is due to soluble enzymes, the activity of which is heightened through the influence of some agent or agents furnished by the pancreas.

In this oxidation of sugar by the tissues of the body a large proportion of the sugar burned is unquestionably entirely destroyed, but not always is the oxidation complete, and then intermediate products make their appearance as a sign and a warning of physiological processes gone astray. Incomplete or improper burning of sugar may, in the absence of any better explanation, be ascribed to lack of the specific enzyme or enzymes, or to lack of suitable conditions for their proper activation.

The sugar of the blood, it will be remembered, is dextrose, an aldehyde, having the formula:

$CH_2(OH).\ CH(OH).\ CH(OH).\ CH(OH).\ CH(OH).\ CHO$

By mild oxidation, the aldehyde group (CHO) is changed into an acid group (carboxyl group, COOH) and monobasic gluconic acid results, viz.:

$CH_2(OH).\ CH(OH).\ CH(OH).\ CH(OH).\ CH(OH).\ COOH$

By more energetic oxidation the dibasic saccharic acid is formed, viz.:

$COOH.\ CH(OH).\ CH(OH).\ CH(OH).\ CH(OH).\ COOH$

These two illustrations suffice to show the readiness with which aldehyde groups (CHO) and primary alcohol groups (CH_2OH) are oxidized to acid groups (COOH). It might be assumed, therefore, that all substances containing the above groups would undergo oxidation in the body along the lines indicated, just as ordinary alcohol when introduced into the system may yield aldehyde and acetic acid when the oxidation is somewhat restricted As we have tried to point out, however, oxidation in the animal body is something more than a mere exposure to oxygen, and it does not necessarily follow that all substances containing these groups will be oxidized in rhythmic fashion in the body, or

through a regular series of successive stages. The very fact that such results do not always occur affords the best of evidence that animal oxidation involves other factors than simple oxygen; *i. e.*, is in harmony with the view that oxidation of a given substance depends in large measure upon the presence of specific intra-cellular oxidases which can attack that particular substance. This view is forcibly illustrated by the work of Paul Meyer [26] with ethylene alcohol, or glycol, and its derivatives.

The oxidation products of glycol that would naturally come under physiological consideration are the following, the relationship of which is indicated by the formulæ:

CH_2OH	COH	$COOH$	COH	COH	$COOH$
CH_2OH	CH_2OH	CH_2OH	COH	$COOH$	$COOH$
Ethylene glycol	Glycol aldehyde	Glycollic acid	Glyoxyl	Glyoxylic acid,	Oxalic acid

It has been found by Pohl [28] that glycol or ethylene alcohol in the case of the dog can be only partially burned in the body, and that its introduction always give rise to a large production of oxalic acid. Mayer has found the same to be true in the case of rabbits. It is a noticeable fact, however, as pointed out by Mayer, that when glycol or ethylene alcohol is given to rabbits in moderately large doses there is a large output of glycolic acid. In fact, it may be stated that under the above conditions about one fourth of the glycol is oxidized simply to glycolic acid, while the presence of considerable oxalate in the urine demonstrates further oxidation of a portion of the glycol to oxalic acid. With sufficient dosage of glycol rabbits succumb, with severe hemorrhagic nephritis, the glomeruli being practically occluded with crystals of calcium oxalate and the whole section of the kidney tissue showing large masses of this crystalline salt.

The significance of these facts in the present connection lies in the probability, as suggested by Mayer, that this peculiar oxidation by which glycolic and oxalic acids result without any appearance of bodies intermediate between these two is due first to simple oxidation of the primary alcohol group of glycol to the carboxyl group, thus giving rise to glycolic acid, as follows:

$$\begin{matrix} CH_2OH \\ | \\ CH_2OH \end{matrix} \rightarrow \begin{matrix} COOH \\ | \\ CH_2OH \end{matrix}$$

By further oxidation of the so-formed glycolic acid the remaining primary alcohol group of the acid is similarly attacked, with formation of oxalic acid as follows:

$$\begin{matrix} COOH \\ | \\ CH_2OH \end{matrix} \rightarrow \begin{matrix} COOH \\ | \\ COOH \end{matrix}$$

In other words, we have here a striking example of a definite line of oxidative action, involving an attack upon a distinct group of atoms, with a complete ignoring of other groups which *a priori* are seemingly just as easy of oxidation. How can this selective action be accounted for other than by the assumption that we are dealing with specific oxidases which have an affinity, as it were, for distinct groups or radicals, reinforced by an influence exerted by the stereochemical configuration of the molecule acted upon. In any event, these results are a striking refutation of the view that animal oxidation follows ordinary chemical and physical laws.

This statement may be reinforced by reference to the results obtained by Mayer [27] in his experiments with glycol aldehyde. This substance by oxidation would naturally give rise to glycolic acid, glyoxylic acid and oxalic acid, as suggested by the preceding formulæ. If, however, glycol aldehyde is administered subcutaneously to rabbits it is at once oxidized without any formation of bodies intermediate between the aldehyde and oxalic acid; glycolic acid and glyoxylic acid, which might be expected, are not found even in traces. On the other hand, dextrose is formed in considerable quantity. This formation of dextrose after injection of glycol aldehyde is not to be ascribed to increased formation of oxalic acid, for it is noticeable that excretion of the sugar commences within twenty minutes after the aldehyde is introduced and before any acid formation could have exerted much influence. More plausible is the hypothesis, suggested by Mayer, that a certain proportion of the glycol aldehyde is directly condensed in the organism to dextrose, the oxidative power of the organism being inhibited in some degree by the toxic action of the aldehyde, and thus permitting a portion at least of the so-formed dextrose to escape combustion and thus appear in the urine. So here again we find evidence of specific oxidative action in the organism, due no doubt to a specific aldehydase, combined with a process of condensation, both of which are very suggestive in connection with our understanding of the processes involved in intermediary carbohydrate metabolism.

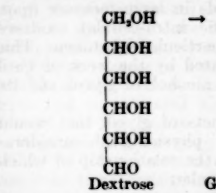
The formation of oxalic acid in the body, just referred to in connection with the oxidation of glycol derivatives, is worthy of further consideration in connection with carbohydrate metabolism. The work of Mohr and Salomon [29] has shown that the body of man normally produces a small amount of oxalic acid which is excreted in the urine. With an oxalate-free diet, the daily urine contains 2-6 mgm. of the acid, increased some what by certain foods such as gelatine. Practically, all the tissues of the body contain small amounts of oxalate; muscle of man, for example, showing 6.5 mgm. of oxalic acid per kilo of tissue.[29] According to Salkowski, the spleen, liver and muscle by autolysis in the presence of uric acid form a small amount of oxalic acid. More pertinent, however, are the observations of Hildebrant [30] who found on giving dextrose to rabbits fed on oats (which contain lime salts) that there was a very great increase in the production of oxalic acid, the acid appearing in the urine as calcium oxalate. In other words, under some conditions, at least, oxalic acid may be considered as an oxidation product of dextrose.

In this connection, it is to be remembered that many observations [31] tend to show that in the

incomplete oxidation of sugar in the body, glycuronic acid is a conspicuous product. Thus, in diabetes mellitus there is frequently, if not most generally, an increased excretion of glycuronic acid; a condition which often persists even when in consequence of a strict anti-diabetic diet, sugar excretion has entirely disappeared. Moreover, there are many diseases in which sugar rarely appears in the urine where glycuronic acid is present in increased quantity. Thus, as stated by Mayer, there are various acute febrile conditions in which increased excretion of glycuronic acid is found in harmony with the fact that in these diseases the power of assimilation for dextrose is inhibited somewhat, coupled with diminished power of oxidation of sugar, thereby resulting in a portion of the dextrose being oxidized only to glycuronic acid, while the conditions do not admit of any excretion of unchanged sugar. Further, it is to be noted that when a soluble salt of glycuronic acid is given to rabbits there results a marked increase in the output of oxalic acid, proportional to the amount of glycuronate fed. In diabetes, oxaluria is occasionally met with, in harmony with a preceding statement that oxalic acid is liable to result from the incomplete combustion of dextrose. The well-known antagonism between glycosuria and oxaluria frequently observed is due to the fact that in severe cases of diabetes the greater portion of the sugar present is not oxidized at all, while with improvement in the assimilation of sugar a portion is oxidized, not, however, to carbon dioxide and water, but simply to oxalic acid. From these statements, the inference may be drawn that both glycuronic and oxalic acids are products of the incomplete oxidation of sugar, and, further, that in some instances, at least, glycuronic acid is an antecedent or intermediary body in the production of oxalic acid.

Glycuronic acid is unquestionably an important body in the intermediary metabolism of carbohydrates. It is much more widely distributed and much more common than has generally been supposed. It does not occur in the free state in the animal body, but exists conjugated with various aromatic substances, notably with phenol, indoxyl, etc., these conjugated forms being normally present in the urine. The introduction of camphor or chloral hydrate (with which glycuronic acid combines) into the system is followed by a marked increase in the excretion of glycuronic compounds in the urine, thus implying the formation in the body of much more glycuronic acid than is indicated ordinarily by the content of this substance in the urine.

As to the origin of glycuronic acid, there is abundant experimental evidence, in harmony with what has previously been stated, that in rabbits, at least, the acid can be formed from dextrose. Further, there is likewise experimental evidence tending to show that in all probability glycuronic acid can also originate from proteid, *i. e.*, from the carbohydrate group of the proteid molecule.[22] The transformation which dextrose undergoes when oxidized to glycuronic acid is very slight, and consists simply in the conversion of the primary alcohol group of the sugar into the carboxyl group of the acid, leaving the aldehyde group of the sugar intact, as indicated by the following formulæ:



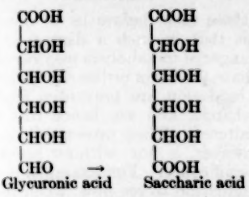
Dextrose — Glycuronic acid

A priori, it might be expected that in the foregoing oxidation the very labile aldehyde group would be the one to undergo change with formation of the monobasic gluconic acid, but the facts available do not support this view, and the conclusion may be accepted as affording another evidence of the specific action of tissue oxidation, in which, without doubt, intra-cellular enzymes are the active agents. The evidence at hand, both experimental and clinical, renders quite conclusive the view that glycuronic acid appears in the tissues and in the excretions as the result of an incomplete oxidation of dextrose (both that which is derived from carbohydrate and that which has its origin in the breaking down of the proteid molecule), and consequently the amount of this acid present may be taken as a measure of the extent to which the sugar is escaping oxidation or combustion. Further, it is to be understood that glycuronic acid is a normal intermediary product of carbohydrate metabolism, representing, perhaps, the first step in the breaking down of sugar, which, under ordinary or normal conditions, progresses to further stages with complete or nearly complete disappearance of the intermediary glycuronic acid, except in those cases where further oxidation is wholly or in part inhibited. In the latter case, the amount of glycuronic acid in the circulation is greatly increased, and so likewise the various aromatic substances, which under ordinary circumstances are combined with it in small degree, are conjugated in larger quantities, thereby leading to an increased excretion of phenol, indoxyl and other glycuronates, with a corresponding decrease in the excretion of ethereal sulphates.

If glycuronic acid represents the first stage in the intermediary metabolism of sugar, then the dibasic saccharic acid might well be suspected as the second product in a progressive oxidation, where the aldehyde group of glycuronic acid is replaced by the carboxyl group as indicated in the formulæ, on the opposite page, a view which is supported by experimental evidence.

Comparison of the structural formula of saccharic acid with that of oxalic acid $\begin{matrix}\text{COOH}\\ |\\ \text{COOH}\end{matrix}$ shows how easily by one or more changes the latter

acid may be formed by progressive oxidation, in harmony with the fact already mentioned that administration of glycuronic acid is followed by



Glycuronic acid → Saccharic acid

an increased excretion of oxalic acid, accompanied by accumulation of oxalic acid in the liver. The liver is unquestionably one of the places where glycuronic acid is oxidized to oxalic acid, since it is easy to demonstrate by digestion experiments with comminuted liver tissue the transformation of the former acid to oxalic acid, an observation of obvious importance in intermediary metabolism. Finally, it may be mentioned that there is some ground for the belief that a part of the dextrose in the body is normally oxidized without first passing through the intermediary stage of glycuronic acid. How large this fraction may be cannot be said, but in any event the glycuronic acid that is formed is further oxidized with subsequent formation of a variable amount of oxalic acid.

As we study these various intermediary steps and stages in carbohydrate metabolism, we cannot avoid being impressed more and more fully with the general principle that the appearance of the so-called abnormal products of carbohydrate degradation, like sugar itself, is due not so much to perverted metabolic action as to inhibition of one or more of the normal oxidative processes by which, under normal conditions, these various intermediary products are further oxidized and destroyed. Incomplete or improper burning of sugar is responsible for the presence of these symbols of disturbed nutrition. Under ordinary conditions they are quickly oxidized from stage to stage, through the agency of specific oxidases or other ferments, until the final end-products are reached. Disturbance of function may, therefore, be ascribed in ultimate analysis to lack of the specific enzyme, or to lack of suitable conditions for the proper action of the enzyme. The burning of sugar in the body is as much dependent upon the progressive action of specific oxidizing enzymes as the hydrolysis of carbohydrates in general is dependent upon the action of amylolytic enzymes. This principle is well illustrated by some experiments recently carried on in our laboratory by Mr. P. H. Mitchell, in which it was found, for example, that soluble erythrodextrin when injected subcutaneously or intraperitoneally was thrown out through the urine in large amount as achroodextrin; *i. e.*, essentially unchanged. Though readily oxidizable, by this method of introduction the dextrin escaped contact with the enzymes which, under other conditions, would have quickly oxidized and destroyed it. Similarly, Mr. Mitchell found that the carbohydrate inulin introduced in like manner could be recovered in the urine to the extent of 70% wholly unchanged. Dr. Paul Mayer has reported a similar experience with glycogen, recovering 50% of the carbohydrate essentially unchanged in the urine after subcutaneous injection. In other words, the specific enzymes, the intra-cellular ferments of the tissues, as well as the amylolytic enzymes of the digestive juices, must have proper opportunity for action if the successive steps of carbohydrate metabolism or oxidation are to be successfully carried out.

Again, in many forms of experimental diabetes, such, for example, as we have been in the habit of speaking of as due to "insults" offered to the pancreas, where such substances as piperidin, potassium cyanide, morphin, coniin, nicotin, curare, ether, chloroform, etc., produce marked hyperglycemia and glycosuria, the explanation now offered [33] is that these drugs do not have any specific action upon any particular gland, like the pancreas, but that they exert more or less of an influence upon the respiratory center, producing dyspnea. Experiments conducted in our laboratory by Dr. Underhill have shown for example, that while piperidin painted on the pancreas causes marked hyperglycemia and consequent glycosuria, the same result follows when the piperidin is painted on the spleen, introduced intraperitoneally, or injected directly into the blood. Further, the drug fails to produce these results when oxygen is administered. In other words, as stated by Dr. Underhill, experimental diabetes of this sort is due simply to diminished oxidation of carbohydrate material, with the consequent accumulation of sugar in the blood, and elimination by the kidneys. Dyspnea is always prone to call forth marked hyperglycemia and glycosuria, whether induced by drugs or otherwise. Lastly, may we not query whether the lack of oxidation of sugar and the consequent glycosuria in these cases is not due to conditions unfavorable or inhibitory to the action of the normal oxidases or other ferments which ordinarily are effective in destroying sugar?

Another chapter in intermediary metabolism well worthy of consideration is that which relates to the amino-acids; but time will not permit of more than a passing reference to these interesting substances, although many of them are formed as products of proteid decomposition within the body, and play important parts in intermediary metabolism. Some of them, however, are connected with peculiar anomalies of proteid katabolism, and I may, therefore, be pardoned if I refer to one or two, since they are associated with conditions of the body in which certain metabolic functions are strangely perturbed. Cystin (and the related body, cystein) is well known as a primary crystalline decomposition product of proteids and is characterized by containing the sulphur of the proteid molecule from which it is derived. In that somewhat rare disease known

as cystinuria cystin appears in the urine, sometimes in fairly large amounts. Normally, the cystin which must be split off from every sulphur-containing proteid during the process of katabolism is oxidized or destroyed by the processes of intermediary katabolism and disappears. But in cystinuria the body loses the power of burning or oxidizing this substance, and hence it is excreted unchanged. Now, it is claimed that there are two, isomeric, forms of cystein; one, known as protein-cystein, because of its production from horn and other proteids, and having the formula: $CH_2.SH-CH.NH_2.COOH$, *i. e.*, α-amino-β-thio-propionic acid; while the other, known as calculus-cystein, because obtained from urinary calculi, has the formula: $CH_2.NH_2-CH.SH-COOH$, *i. e.*, α-thio-β-amino-propionic acid. If the so-called protein-cystein is fed to a person afflicted with cystinuria the substance is excreted unchanged, simply increasing the amount contained in the patient's urine; but if the isomeric form, calculus-cystein, is fed it at once disappears, the amount of sulphate in the urine being correspondingly increased, just as happens with both forms when introduced into the system of the healthy individual.[34] In other words, under the conditions prevailing in cystinuria, the body has lost the power of burning the one form of the amino-acid, *i. e.*, the α-amino acid. Indeed, in this condition of disease, intermediary metabolism is so perverted that all α-monamino acids whenever introduced into the system are excreted unchanged, the body having apparently lost all power of burning them. Thus, the α-monamino acids, tyrosin, leucin, aspartic acid, etc., which are completely oxidized in the healthy organism to carbon dioxide and ammonia, *i. e.*, as urea, are excreted almost quantitatively when fed in cystinuria. We may well pause here to emphasize the fine discrimination which the body shows in its treatment of these two isomeric forms of cystein (in cystinuria). The two substances are essentially alike, except in the relative position in the molecule of the amino (NH_2) group, yet the one is easily oxidized, while the other passes through the body absolutely unchanged. Moreover, it is evident that in cystinuria this inhibition of the power to burn the α-amino acid is a general one, preventing any α-amino acid from undergoing change in the body.

Further, in cystinuria, diamino-acids, such as arginin and lysin, behave in a peculiar manner. Unlike the monamino-acids, they undergo change, but it results simply in a slight transformation and not in a complete or profound oxidation. Thus, when arginin is fed to a person with cystinuria it is converted into the diamine putrescine, viz., tetramethylene-diamine:

$$\underset{\text{Arginin}}{NH_2.C(NH)-NH.CH_2-(CH_2)_2-CH.NH_2-COOH} \rightarrow$$

$$\underset{\text{Putrescine}}{NH_2-CH_2-(CH_2)_2-CH_2NH_2}$$

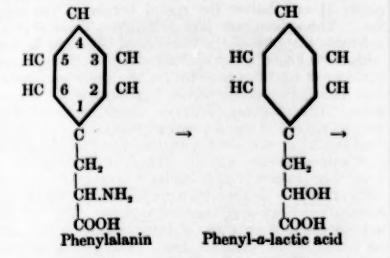
In a similar way the diamino-acid lysin is transformed into the diamine cadaverine, viz., pentamethylene-diamine:

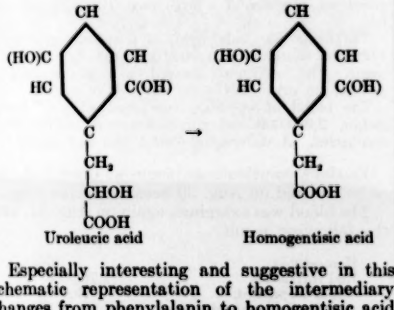
$$\underset{\text{Lysin}}{CH_2NH_2-(CH_2)_3-CH.NH_2.COOH} \rightarrow$$

$$\underset{\text{Cadaverine}}{CH_2.NH_2-(CH_2)_3-CH_2.NH_2}$$

With these facts before us as illustrations, it is evident that in such a disease as cystinuria many changes of metabolism may occur, by which intermediate products ordinarily undergoing progressive oxidation are prevented from suffering further change, and are hence cast out of the body unaltered. Their presence in undue quantities, however, is not without possible physiological significance. For example, it needs very little imagination to see how, when the body has lost in greater or less measure the power to burn organic acids, a condition of acidosis may be produced, and how this condition may in turn influence the production of ammonia in the body from the breaking down of proteid in an attempt on the part of the latter to neutralize or overcome the influence of the accumulating acid. But we have not time to discuss this theme, however important or suggestive it may be. Rather let me bring to your attention another anomaly of intermediary metabolism, as seen in alkaptonuria, a condition in which the urine shows the presence of the peculiar diphenol acids known as homogentisic and uroleucic acids. It has long been known that in this disease a rich proteid diet tends to increase the output of these acids, from which the inference has naturally been drawn that some cleavage product of the proteids must be their antecedent. The presence of the aromatic group suggests tyrosin as one of the antecedents, and experiment has shown that the ingestion of tyrosin by persons having alkaptonuria is followed by an increased excretion of homogentisic acid. The same observation has been made with phenylalanin, from which we may conclude that both of these aromatic substances, derivatives of proteid matter, are normal antecedents of homogentisic acid. In other words, the characteristic acids found in the urine in alkaptonuria have their origin in the aromatic complex of the proteid molecule through the stage of the two aromatic substances mentioned above. As stated by Falta,[35] it is quite apparent that in alkaptonuria there is a profound disturbance in the breaking down of the aromatic amino-acids which result from proteid katabolism, as a result of which uroleucic or homogentisic acid (or both) appear in the urine. Under normal conditions, these two acids after suffering deamidization are completely oxidized to carbon dioxide and water. Thus, in the normal individual, homogentisic acid introduced into the alimentary tract completely disappears, *i. e.*, it is entirely oxidized to simpler products, but when fed to a person afflicted with alkaptonuria it appears quantitatively in the urine. In other words, in alkaptonuria the body has entirely lost the power of splitting off the benzol ring from the intermediary proteid product homogentisic acid. On the basis of experimental evidence, it is probable that the progressive breaking down of the aromatic amino-acids derived from proteid kata-

bolism, after having reached the tyrosin or phenylalanin stage, is as follows:





Especially interesting and suggestive in this schematic representation of the intermediary changes from phenylalanin to homogentisic acid is the formation of phenyl-*a*-lactic acid. The splitting off of nitrogen from the alanin, *i. e.*, its deamidization, takes place at this stage with the resultant formation of a non-nitrogenous acid, a complex of the aromatic group and *a*-lactic acid. We thus see opened up, as stated by Falta, a new point of view regarding the formation of sugar from proteid. Between lactic acid and dextrose there are many obvious physiological connections, and it is quite conceivable, to say the least, that a portion of the lactic acid originating in this manner may in the liver be transformed into sugar or glycogen. In alkaptonuria, however, while deamidization of alanin may occur as normally, oxidation and other changes stop at the uroleucic or homogentisic acid stage, the body cells having lost the power of splitting off or burning the benzol ring, an anomaly in intermediary metabolism without doubt due to the absence or inhibition of the specific intra-cellular enzyme which normally accomplishes this transformation.

And so we see on every hand in studying the many and varied processes of intermediary metabolism, of which the foregoing are to be taken merely as illustrations, the significant part played by intra-cellular enzymes in bringing about the normal and abnormal changes characteristic of health and disease.[36] The processes which we have heretofore considered as due to the peculiar vital properties of the tissue cells, and which were supposed to be entirely dependent upon their morphological and functional integrity, we now see are due — certainly in large measure, if not wholly — to a great variety of enzymes which can be separated from the cell substance and which retain their activity even when free from the influence of the living protoplasm. Further, we find ample evidence that the varied processes of katabolism are the result of orderly chemical changes, of a progressive character, in which cleavage, hydration, reduction, oxidation, deamidization, etc., alternate with each other under the influence of specific enzymes, where chemical constitution and stereochemical configuration of the various molecules are determining factors in the changes produced. It is therefore evident that our understanding of intermediary metabolism will depend in large measure upon the intelligent application of the principles and methods of physiological chemistry in our study of these important and far-reaching problems.

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[17] Mendel and Jackson: American Journal of Physiology, Vol. iv, p. 168.

[18] Mendel and White: On the Intermediary Metabolism of the Purin Bodies: The Production of Allantoin in the Animal Body. American Journal of Physiology, Vol. xii, p. 93.

[19] Comptes rendu, Tome 110, p. 742 and p. 1314.

[20] Zeitschr. f. klin. Med., Band xxi, p. 315.

[21] Arch. de Physiol., Tome xxiv, p. 337.

[22] Diabetes mellitus nach Pankreasextirpation. Archiv f. exper. Pathol. u. Pharm., Band xxvi, p. 371.

[23] Hersog: Liefert das Pankreas ein Dextrose spaltendes, alkohol und kohlensäure bildendes Enzym? Hofmeister's Beiträge zur chemischen Physiologie und Pathologie, Band ii, p. 102.

[24] Die Kohlehydrateverbrennung in den Muskeln und ihre Beeinflussung durch das Pankreas. Zeitschrift für physiologische Chemie, Band xxxix, p. 336. Also Band xlii, p. 401, and Band, xliii, p. 547.

[25] Experimentelle Beitrage zur Frage des intermedi ären Stoffwechsels der Kohlehydrate. Zeitschrift f. physiologische Chemie, Band xxxvii, p. 135.

[26] Ueber den oxidativen Abbau der Fettkörper im thierischen Organismus. Archiv. f. exper. Pathol. u. Pharm., Band xxxvii.

[27] Loc. cit., p. 151.

[28] Untersuchungen zur Physiologie und Pathologie der Oxalsäurebildung und-Ausscheidung beim Menschen. Deutsch. Archiv. f. klin. Medicin, Band lxx, p. 486.

[29] Cipollina: Ueber die Oxalsäure im Organismus. Berliner klin. Wochenscrift, 1901, p. 544.

[30] Ueber eine experimentelle Stoffwechselabnormität. Zeitschrift f. physiologische Chemie, Band xxxv, p. 141.

[31] See especially Paul Mayer: Uber unvolkommene Zuckeroxydation im Organismus. Deutsche med. Wochenschrift, 1901, p. 243 and p. 262.

[32] See Paul Mayer: Neue Untersuchungen über die Glukuronsäure. Biochemisches Centralblatt, Band i, p. 377

[33] Underhill: Certain Aspects of Experimental Diabetes. American Journal of Physiology, Vol. xiii, p. 36.

[24] See Loewy and Neuberg: Ueber Cystinurie. Zeitschrift f. physiologische Chemie, Band lxiii, p. 338.
[25] Die Alkaptonurie. Biochemisches Centralblatt, Band iii, p. 173.
[26] See A. Oswald: Die Bedeutung der intracellulären Enzyme in der Pathologie. Biochemisches Centralblatt, Band iii, p. 305.

Original Articles.

A CASE OF LYMPHATIC LEUKEMIA IN A CHILD.*

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AND
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BESSIE C., a Jewess, was admitted to the Children's Hospital on the service of Dr. Morse Aug. 23, 1904, when three and one half years old.

Family History. — The family history was negative. Her father and mother and four other children were well. There had been no miscarriages. There was no history of tuberculosis in the family, or of exposure to tuberculosis.

Previous History. — She was normal at birth, weighed nine and one half pounds, and was nursed fifteen months. She had chicken pox at six months, anterior poliomyelitis involving the right arm and both legs at eighteen months, whooping cough at two years and measles at two and one half years. No sequelæ followed either the whooping cough or the measles. She had practically recovered from the infantile paralysis, except that she used the right arm less freely than the left.

Present Illness. — Loss of weight and stsength, which began about the first of June, had progressed steadily but slowly. There had been an increasing pallor during the same time. Her only complaints had been of a tired feeling and of pain in the ears. Her appetite had been poor, and she had had occasional attacks of abdominal pain followed by nausea and vomiting. The vomitus contained mucus and food, with some bile. There had been a slight cough for some weeks. Puffiness of the face and swelling of the neck had not been noticed until two weeks before entrance. There had been no hemorrhages.

Physical Examination. — She was well developed and nourished and perfectly clear mentally. There was marked pallor of the skin, with a slight yellowish tint. The mucous membranes were pale. There was puffiness about the eyes. The ears and nose showed nothing abnormal. The tongue was moist and showed a thin white coat. The throat was normal. There was no tenderness or rigidity of the spine. There was slight lagging of the right chest. There was dullness on the right side below the second rib continuous with the liver and heart dullness and extending back to the anterior axillary line. There was hyper-resonance over the rest of the right side. The respiration was diminished in intensity in the dull area and bronchovesicular in character. The expiration was prolonged. Fluoroscopic examination showed a dark area corresponding to this area of dullness. The left lung was normal except for exaggerated respiration and an occasional sibilant râle. The cardiac impulse was visible and palpable in the fifth space in the nipple line. The upper border of the cardiac dullness was in the third space and the left in the nipple line; the right could not be determined. The action was regular, the sounds clear. The second pulmonic sound was decidedly the louder. The abdomen was full and tympanitic. There were no evidences of fluid or of new growths. The lower border of the liver was palpable 4½ cm. below the costal border in the nipple line. The spleen was just palpable. There was considerable atrophy of the muscles of the right forearm, with a weakened grasp on that side. Both legs were a little weak and the muscles on the right were flabby. The knee jerks were present, but diminished, on both sides. The plantar reflexes were normal. There was no edema of the dependent portions. There were firm swellings, not tender, in the region of the parotid and sub-maxillary glands. There were many large, firm, non-tender lymph nodes varying in size from that of a pea to that of a large cherry in the post-cervical, axillary and inguinal regions. The skin was not adherent over these enlarged nodes and showed no evidences of inflammation. The left epitrochlear gland was the size of a large pea; the right was not felt.

The urine was pale, acid, of a specific gravity of 1,020 and contained a trace of albumin, but no bile or sugar. The sediment showed a large amount of ammonium urate and a few crystals of cystin.

The blood at entrance contained 45% of hemoglobin, 2,080,000 red corpuscles and 16,200 white corpuscles. A differential count was not made.

Fowler's solution was begun at once, but had to be omitted on Aug. 30 because of vomiting.

The blood was examined again on Aug. 31, with the following result:

Hemoglobin,	40%
Red corpuscles,	1,765,000
White corpuscles,	19,000
Small mononuclear,	58%
Large mononuclear,	9%
Polynuclear neutrophiles,	32.8%
Eosinophiles,	.2%

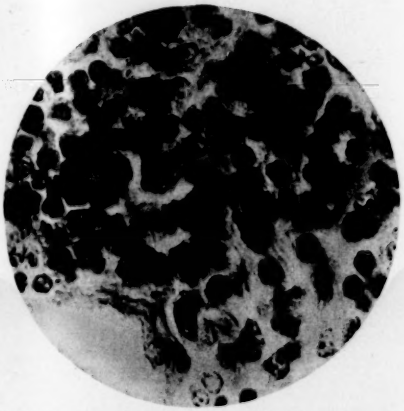
The red corpuscles showed considerable variation in size and moderate variation in shape. There was no polychromatophilia, but a little stippling. Two microblasts, 13 normoblasts and 22 megaloblasts were seen in counting 400 white cells.

Although the percentage of the mononuclear cells, and especially of the small mononuclear cells, was large, it was felt that when the age of the child and the total number of white corpuscles were taken into consideration that the diagnosis of lymphatic leukemia was not justified and that search must be carried further. It seemed possible to exclude syphilis on the family history and the absence of past or present signs of the disease. Tuberculosis was excluded because 3 mgms. of tuberculin caused no reaction. No parasites or eggs of parasites could be found in the dejections.

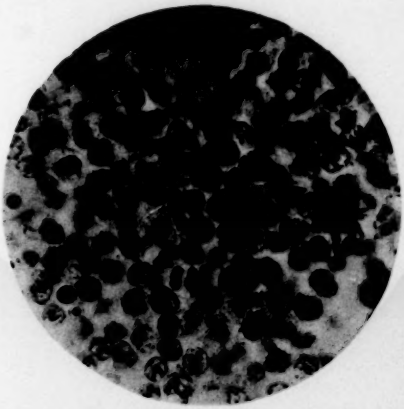
Several small lymph nodes were removed from the left groin under ether for pathological examination on Sept. 1. These nodes had the general outlines and under low power the appearance of lymph nodes. There was some general increase of the connective tissue stroma. In many places the follicles were well distinguished; some of the lymph sinuses were filled with small lymphoid cells.

Studied under the high power (magnification 900 diameters), the cells were seen to be mostly

* Read before the Association of American Physicians at Washington, May 17, 1905.



SPEC. 1. The small, round cells are separated by a fair amount of stroma. Occasional large irregular cells and many eosinophiles, six of which are present in this field.



SPEC. 2. Practically all small lymphoid cells, showing a very great number of mitotic figures.



FIG. 1. Photograph at entrance.

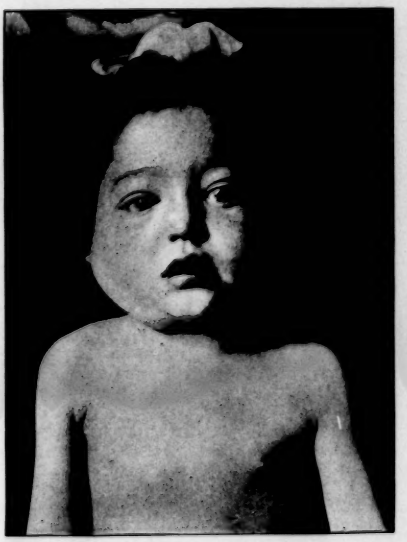


FIG. 2. Photograph Sept. 30.

small lymphoid cells with the stroma pretty nearly uniformly distributed between them. Their nuclei were comparatively large and rather lightly stained except for the numerous dark blue chromatin granules. In many places they showed rather numerous mitotic figures. There were also great numbers of the larger type of lymphoid cells.

There were a number of large endothelial cells with large, irregular vesicular nuclei and considerable cytoplasm. These seemed to be associated with the reticulum. There were a few polymorphonuclear neutrophiles. In places there was much blood in the lymph spaces, but no abnormal forms of red cells were seen.

Especially noticeable was the large number of eosinophiles that were present. There were occasional large cells, with one or more irregular vesicular nuclei. None of these were phagocytic, and although not giant cells, they were similar to some of the large cells in sarcoma.

From this tissue a microscopical diagnosis of malignant lymphoma or lymphosarcoma was made, and (considering the slightly altered condition of the blood at that time) the possibility of its being a case of beginning Hodgkin's disease was considered.

Three-quarters of a grain of citrate of iron was given subcutaneously every other day throughout September. The general condition improved decidedly during the first three weeks of the month. The appetite and digestion were much better. The color of the skin and mucous membranes improved quite markedly and the puffiness of the face diminished. The masses in the neck, the general enlargement of the lymph nodes and the dull area in the right chest remained unchanged. The liver was palpable 5 cm. and the spleen 2 cm. below the costal border. The blood condition improved at the same time.

Examination of the blood on Sept. 16 showed

Hemoglobin,	70%
Red corpuscles,	4,800,000
White corpuscles,	29,000
Small mononuclear,	56%
Large mononuclear,	16%
Polynuclear neutrophiles,	24.8%
Eosinophiles,	.2%
Myelocytes,	2%
Mast cells,	1%

There was considerable variation in the size and shape of the red corpuscles, moderate polychromatophilia and slight stippling. Twenty-six normoblasts and 12 megaloblasts were seen while counting 400 white cells.

About this time interference with respiration during sleep developed. The breathing was noisy, although the mouth was kept closed. There was no enlargement of the tonsils and no increase of adenoid tissue in the throat. The obstruction appeared to be below the pharynx. Dr. Langmaid found no cause for the obstruction on examination and thought that the trouble with the respiration was due to pressure of the growth in the chest on the nerve trunks. A nasal discharge with a markedly septic odor soon developed. Cultures from both nose and throat showed no Klebs-Loeffler bacilli. A firm new growth then appeared in the posterior pharynx and increased somewhat in size. The obstruction to resipration and the nasal discharge with the resulting septic absorption caused a great deal of difficulty for several weeks; later they were much less troublesome.

About the same time that the difficulty with respiration appeared, the signs of a new growth in the chest began to increase. Dullness developed under the sternum and to the left of the heart. The respiration on the right side was as before. The left chest moved less than the right and the respiration was decidedly diminished although not changed in character. The masses at the sides of the face also began to increase in size, the lymph nodes throughout the body became larger and new ones appeared. The enlargement of the masses and lymph nodes increased progressively, and during the latter part of September the general condition fell off decidedly.

The examination of the blood Sept. 30 resulted as follows:

Hemoglobin,	70%
Red corpuscles,	4,200,000
White corpuscles,	34,000
Small mononuclear,	50%
Large mononuclear,	12%
Polynuclear neutrophiles,	34%
Eosinophiles,	1%
Myelocytes,	2.5%
Mast cells,	.5%

There was moderate variation in the size and shape of the red corpuscles with considerable polychromatophilia and slight stippling. Twenty-one normoblasts and 5 megaloblasts were seen while counting 400 white cells. Even at this time the diagnosis of lymphatic leukemia seemed hardly justified, that of Hodgkin's disease or lymphosarcoma seeming far more probable. The patient then came into the charge of Dr. T. M. Rotch, owing to a change in service.

Lugol's solution, in doses of from 1 to 5 minims three times daily, was begun about the first of October and continued until death.

Early in October the gums became spongy and bleeding and fine petechial spots appeared all over the body. A few large ecchymoses also appeared on the sacrum and thighs. About the middle of October there was a perforation of the hard palate on each side of the median line by a dark, soft, irregular substance resembling a new growth about to break down. The blood picture changed materially as regards the differential count at this time. An examination of the blood Oct. 10 by Dr. Richard C. Cabot resulted as follows:

Hemoglobin,	55%
Red corpuscles,	3,216,000
White corpuscles,	30,600
Lymphocytes,	91.4%
Polynuclear neutrophiles,	8%
Eosinophiles,	.4%
Mast cells,	.2%

The blood showed the usual changes of severe secondary anemia. Forty-seven normoblasts and 24 megaloblasts were seen while counting 400 white cells.

The diagnosis of lymphatic leukemia was then made on account of the high percentage of lymphocytes in spite of the comparatively low white count.

A gland was removed from the left side of the neck by Dr. H. L. Burrell on Oct. 17. The examination of this tissue showed little resemblance to a normal gland; no follicles could be distinguished, and the tissue was nearly uniform throughout the section. With the high power and mucous membranes. The signs of new growth in the chest did not increase a great deal, but respiration continued difficult. There were no further hemorrhages. The nasal discharge diminished during the last two weeks. The urine was always normal. The hemoglobin and the number of red corpuscles diminished steadily, while the number of white corpuscles increased, reaching 174,600 the day before death, which occurred on Nov. 4, five months after the onset. The percentage of mononuclear cells remained high, varying, however, at different examinations. The results of the later examinations are shown in the table. An autopsy was refused.

Date.	Hemoglobin.	Red Corpuscles.	White Corpuscles.	Small Mononuclear.	Large Mononuclear.	Polynuclear Neutrophiles.	Eosinophiles.	Myelocytes.	Mast Cells.	To 400 Whites. Microblasts.	Normoblasts.	Megaloblasts.	Polychromatophilia.	Variation in size.	Poikilocytosis.	Stippling.
Aug. 23	45%	2,080,000	16,200													
Aug. 31	40%	1,765,000	19,000	58.0%	9.0%	32.8%	0.2%			2	13	22	None	Consid.	Mod.	?
Sept. 16	70%	4,800,000	29,200	56.0%	16.0%	24.8%	0.2%	2.0%	1.0%		26	12	Mod.	Consid.	Consid.	Slight
Sept. 30	70%	4,200,000	34,000	50.0%	12.0%	34.0%	1.0%	2.5%	0.5%		21	5	Consid.	Mod.	Mod.	Slight
Oct. 10	55%	3,216,000	30,600	91.4%		8.0%	0.4%		0.2%		47	24	Usual changes of severe secondary anemia.			
Oct. 20				58.6%	27.7%	11.7%	1.0%	1.0%								
Oct. 25	25%	2,960,000	49,000	48.0%	28.0%	20.0%		2.0%	2.0%		4	12	Mod.	Mod.		
Nov. 3	20%		174,600	72.5%	17.5%	6.0%		4.0%			6	18				

(magnification 900 diameters) there was seen to be a very great proliferation of lymphoid cells. These cells were not of the type of the usual small lymphocytes, but had the characteristics of the cells in the germ centers of the follicles and other places where there is active proliferation of lymphoid tissue. These cells had fairly large vesicular nuclei and showed enormous numbers of mitotic figures. In the greater part of the tissue there were no other cells. There was very little stroma and in large areas there was none at all to be seen.

The larger cells similar to those seen in lymphosarcoma were absent. There were only occasional eosinophiles. There were numbers of nucleated red blood corpuscles in the sinuses.

A diagnosis of anemia associated with lymphatic hyperplasia or acute lymphatic leukemia was made from this examination.

All the sections in this case were studied with eosine and Unna's polychrome methylene blue stain. Several sections from each specimen were also stained and examined for tubercle bacilli, but none were found.

Failure was progressive from this time on. There was a steady increase in the size of the lymph nodes with progressive failure in the general condition and in the color of the skin

This case is of interest in that it afforded an opportunity to study the development of the changes in the blood and lymph nodes during a considerable period, and that although it was most carefully studied, the correct diagnosis could not be made until a comparatively short time before death. It is unfortunate that the picture could not have been completed and the diagnosis still further verified by autopsy. It shows, however, that the character of the changes in the blood may not develop to a degree sufficient to justify a positive diagnosis for many months. It also shows that the changes in the lymph nodes may be, not only at first but even for a considerable time, materially different from those which are usually considered to be typical of this disease. It is noteworthy that the characteristic changes in the blood and lymph nodes appeared at essentially the same time.

The only inference that can be made from the histological study of these tissues at different stages of the disease is that lymphatic leukemia may have its origin in a malignant growth affecting the lymphoid tissues more or less generally, and that not until there is a secondary proliferation of the lymphoid cells do we get the typical tissue picture and blood condition which is char-

acteristic of lymphatic leukemia. It suggests that leukemia, pseudo-leukemia and malignant lymphoma cannot be separated as three distinct entities, and that they do not always differ characteristically in the histological structure of their lymphoid tissues; and that the microscopical sections in these cases will be often wrongly judged in the absence of complete clinical data as regards the distribution of the process and the examination of the blood.

In short, this case emphasizes again our ignorance as to the development of the pathological changes in the diseases of the blood and lymph nodes. It does not warrant any definite conclusions, either specific or general, but is reported simply as a contribution to the literature of these subjects with the hope that it may be of some assistance in the solution of the problems connected with them.

A FURTHER CONTRIBUTION TO THE STUDY OF BACILLURIA IN TYPHOID FEVER AND ITS TREATMENT WITH UROTROPIN.*

BY CHAS. D. EASTON, M.D., BOSTON.

The literature on the subject of bacilluria in typhoid fever and the use of urotropin in its treatment, up to the year 1899, may be found in Dr. Mark W. Richardson's paper in the *Journal of Experimental Medicine*, vol. iv, No. 1, 1899. I have tried to bring the subject up to date.

Gwynn [1] treated successfully 5 cases of cystitis by irrigations with corrosive sublimate 1-50000. Two cases were given urotropin. In one the number of bacilli was much diminished but they were still present at the last report. In the second case they finally disappeared after seventeen days. In a later paper [2] he had 10 cases, in 3 of which the bacilli appeared in the urine before the Widal reaction. He thinks this may be of value in diagnosis. Stress is laid on the importance of urinary disinfection. Urotropin was tried in two of three cases without effect. He prefers mercuric chloride irrigations 1-50000. Further work on the subject [3] seems to strengthen his former views. He says milk of lime and chlorinated lime are of some value. He also tried formaline, but thinks it is too expensive to come into general use.

Schichold [4] out of 17 cases found bacilli present in 5, but thinks that the bacilli are excreted only when the kidney is diseased, beginning immediately as soon as the kidney is affected.

The observations of Walker [5] and Neufeld [6] agree with others and both advise the use of urotropin. Walker cites an instance of a well which was infected by the urine of a trooper returning from the army. Twelve persons took the disease.

Horton-Smith [7] found bacilli in the urine as early as the thirteenth day of the disease, and as late as the fourteenth day of convalescence, and says that they may persist for years. He reports in all 45 cases with 11 of bacilluria. Urotropin was tried in 10 of these and all were cured, but in some cases the bacilli returned and urotropin had to be given again. His idea is that in cystitis the organisms work down into the wall of the bladder.

Lewis [8] examined 45 cases, but only found bacilli in the urine of 1 case. He speaks well of urotropin and advises its use.

Loida [9], Schuder [10], Gehrmann [11], Klemenko [12], Vincent [13] and Jacobi [14] agree with other investigators as to the occurrence of bacilli in the urine of their cases. Jacobi reports 643 cases, 27.8% of which had bacilluria. He did not use urotropin, and considers it of little value because relapses occur and the bacilli return in the urine. Vincent in cystitis uses potassium permanganate irrigations. No other treatment is mentioned in his paper. Neither Klemenko or Schuder used urotropin.

Richardson [15] reports the finding of the bacilli in the urine as early as the eighth day, while in other cases they were not present until the forty-second day of the disease.

Drake-Brockman [16] writing on the practical application of urotropin as a urinary antiseptic has seen no untoward results from its administration and thinks it has not received sufficient notice in England.

Ehrmann [17] used urotropin in a number of affections with success. One case of cystitis was irrigated with silver nitrate and severe hemorrhage followed. Even after bladder irrigations with boracic acid and silver nitrate a cure cannot be expected until urotropin is used in addition. Gordon [18] reports a case of cerebral syphilis in which urotropin was used and supposed to have caused hematuria. Cammidge [19] concludes that by the systematic use of urotropin in all cases the very real danger from the urine which is so frequently overlooked may be avoided.

Brown [20] reports 2 cases of typhoid which he treated with urotropin. One after taking 10 gr., *t. i. d.*, for two days had painful micturition, and after five days had blood in the urine. The other after 10 gr. for seven days had hematuria. Urotropin was omitted and recovery took place in forty-eight hours. Urotropin was given in 13 out of 82 other cases and there was no trouble except in one which was also having turpentine. He believes that the urinary discomfort which precedes hematuria should be considered a danger signal. Millijan [21] gave 5 gr., *t. i. d.*, and in seven days produced pain in the bladder followed by hematuria. Urotropin was stopped and ill effects ceased in two days.

Griffith [22] gave 10 gr., *t. i. d.*, and next day there was urinary pain, after ten days backache and swollen eyelids. There was evidently no hematuria in this case. Urotropin was omitted and untoward symptoms ceased after three days. Forbes [23] also reports a case of pain in bladder and hematuria after 10 gr., *t. i. d.*

Schumberg [24] tries to prove that because solutions of urotropin outside the body do not always kill typhoid bacilli that it is of no value

*Read at the semi-annual meeting of Suffolk District Medical Society, April 29, 1905.

internally. Clinical experience, however, seems to disprove this theory.

P. Fraenckel,[25] Orlowski [26] and Busing [27] used urotropin with good results. Fraenckel did not make bacteriological examination of the urine of his cases, but gave the drug as a routine measure in the later stages of the disease.

Goetzel and Salus [28] and Biss [29] consider urotropin an active antiseptic, especially against typhoid bacilli. Biss has seen 2 cases of hematuria, but thinks it only necessary to be careful in its administration.

Fuchs [30] found typhoid bacilli in 16% of cases not treated with urotropin. Of 40 cases in which the drug was given only 1 showed bacilluria. He is of the opinion that even where no bacilli can be found microscopically numerous colonies are obtainable by cultures, and when urotropin is discontinued the bacilli may return in the urine. He thinks the drug must be commenced before the fever subsides, and continued into convalescence to the latest date at which bacilluria is liable to develop.

Knox [31] advises the treatment with urotropin of all cases of typhoid where the urine is turbid. In no case has he seen any ill effects or discomfort. He considers it of great use and importance in the treatment of typhoid fever in the army.

In an article in the Boston Medical and Surgical Journal for Feb. 5, 1903, Richardson, without giving the literature, sums up the knowledge on the subject of bacilli in the urine of patients sick with typhoid fever and draws the following conclusions:

"1. Typhoid bacilli are present the in urine of about 21% of individuals affected with typhoid fever.

"2. The bacilli when present are usually in pure culture, and their number is frequently enormous: many millions in each cubic centimeter of urine.

"3. The invasion of the urine by the bacilli takes place in the later stages of the disease. Unless measures are taken to remove the organisms they persist frequently for weeks, occasionally for months, and rarely for years, and thus constitute (*a*) a danger to the patient himself, cystitis and possibly orchitis and epididymitis. What is much more important, a grave source of danger to the public health.

"4. The necessity for the rigid disinfection and supervision of typhoid urine is apparent.

"5. In urotropin we have a drug which will, in the vast majority of cases, remove typhoid organisms from the urine, not only in the cases of simple bacilluria but also in those in which cystitis has resulted. Very rarely an obstinate cystitis may require the use of vesical irrigations. Very infrequently a case will be seen in which the use of urotropin is followed by hematuria. In such cases the drug should be omitted and irrigations of the bladder substituted.

The subject in its relation to the public health is of the utmost importance. In any opinion, it should be a fixed rule, and one rigorously enforced, that no typhoid convalescent be discharged as well until his urine has been proved permanently free from bacilli. In this way only can we prevent a considerable percentage of our typhoid convalescents from becoming unsuspected foci for the further distribution of the disease."

In order to demonstrate the practical value of the above conclusions, during the past year, under Dr. Richardson's direction, and with the consent of the visiting staff, all cases of typhoid fever treated at the Massachusetts General Hospital have been given 5 gr. of urotropin three times a day as a routine measure throughout the disease. This was omitted as soon as convalescence was established. In 46 of these cases after the drug had been stopped from six to ten days, and before the patient was discharged, repeated examinations of the urine were made. The specimens were obtained under as nearly as possible aseptic conditions. At first cultures were made on agar plates but it was soon found that the colonies were so few, in many cases none at all, that it was only necessary to use the agar slant in the culture tubes. In no case of this series was there any growth of typhoid bacilli and all the specimens appeared perfectly clear.

The subsequent history of one of these cases was of particular interest. As soon as the temperature became normal urotropin was omitted. The urine was examined and no typhoid bacilli found. A few days later a relapse began, the urine became slightly cloudy and showed the presence of some cystitis. Large numbers of typhoid bacilli were found in the cultures, urotropin was resumed and he was discharged from the hospital with a clear urine free from bacilli. About one week later patient reported and was found to be suffering from a swollen testicle. There was a slight cystitis and bacilli in the urine. Urotropin was again given, 5 gr. three times a day, and five days later the cystitis and bacilluria had disappeared. This case would seem to agree with the theory [32] that orchitis, epididymitis and prostatis, not uncommon complications of typhoid fever, are ascending infections from the urine containing typhoid bacilli.

In order to determine whether or not the effects of urotropin were permanent, about thirty patients who had been sick with typhoid and treated with urotropin one year previously were sent for. Of this number only ten reported. The examination of the urine of these cases was negative for typhoid organisms.

Coleman [33] after a careful study and review of the subject concludes that the administration of urotropin may be, but rarely is, attended by toxic effects. I have examined the records of all the cases of typhoid fever treated with urotropin at the Massachusetts General Hospital, comprising 486 cases.

Nearly all received from 8 to 10 grs. three times a day and some 15 gr. three times a day. In some cases the drug was given only two or three days a week, others had it daily. There were 3 cases of painful micturition, and 2 of hematuria. In several cases a few red blood

corpuscles were found in the microscopical examination of the urine. These all cleared up within a day or two after the withdrawal of the drug. It would thus appear that the danger from toxic action is practically very slight.

It is hardly necessary to-day to call attention to the great need of a simple and effective means of rendering the urine of typhoid patients harmless to themselves and the community. In 1898 [34] about one fifth of the soldiers in the national encampments in the United States developed typhoid fever. Among 107,937 officers and men there were 20,738 cases, 19.26%. [34] It is believed that in these cases the urine was an important factor in the dissemination of the disease. [35]

The additional conclusions which it would seem justifiable to draw from these investigations are:

1. Although urotropin may, in very rare cases, cause uncomfortable symptoms it does not invalidate the use of the drug.

2. Urotropin is of less value in cases where an active inflammation of the bladder has occurred.

3. But, as far as this series of observations goes, the moderate use of urotropin throughout the disease prevents cystitis.

4. Finally, the routine administration of the drug in all cases of typhoid fever would seem to be strongly indicated, for by such a course of treatment bladder complications are avoided, the urine made inocuous to those brought in contact with the patient, and it is possible to discharge patients who have been sick with typhoid fever in full belief, that, as far as the urine is concerned, they will be harmless to the community.

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THE first International Congress of Radiology and Ionization will take place at Liège, Belgium, from September 12 to 14.

Medical Progress.

REPORT ON OBSTETRICS.

BY FRANK A. HIGGINS, M.D., BOSTON.

VAGINAL CESAREAN SECTION IN ACCOUCHEMENT FORCE.

ZINKE,[1] in a paper on the "Relative Value of the Means and Methods Employed in Accouchement Forcé," recommends very highly the method of deep cervical incisions, or the so-called vaginal Cesarean section, and he believes they are destined to play a permanent and important rôle in the management of forced labors in the future. Many of the cases now subjected to manual or balloon dilatation will be treated by cervical incisions. He says it is *the* method in the presence of sepsis of the vagina, because the operation is short in duration and can be performed under a continuous flow of an antiseptic solution. An intact cervix, whether hard or elongated or not, is always an indication for cervical incision; also when the cervix is the site of malignant disease or extensive cicatrization. Cervical incisions are also recommended in premature rupture of the membranes, generally contracted pelves, eclampsia, heart disease, articulo mortis, threatened rupture of the uterus, placenta previa, albatio placentæ, and other conditions demanding rapid delivery.

Carstens[1] also recommends the vaginal Cesarean operation for delivery in grave cases of eclampsia, as he believes it enables the patient to be delivered quickly and safely. Deep lateral incisions he regards as dangerous, as in one of his cases in which this was done the wounds were extended by tearing into the broad ligament, in the delivery of the fetus, so that much hemorrhage is likely to occur. He reports two cases following the technic of Dührssen, making one median anterior incision through the cervix and as far as is necessary in the uterus, first separating the bladder up as far as the peritoneum by a transverse incision at the junction of the anterior vaginal wall with the cervix, — the bladder is then easily pushed up out of the way. There is very little hemorrhage and the wound is easily sutured. The patient is delivered by forceps after the incision is made.

He says the operation is not difficult and any surgeon having had some experience in vaginal work can have no trouble with a prompt and sure delivery and in saving the patient.

NON-OPERATIVE TREATMENT OF ECLAMPSIA.

Bacon[2] emphasizes the importance of rest in bed and a milk diet in the medical treatment of eclampsia. In other respects he differs from what has been generally accepted as good treatment. He says the recent theories concerning the action of sodium chloride and other similar salts in cases of nephritis and edema, which are causing a considerable change in the method of treating these diseased conditions, are of much interest to us because of their bearing on the

[1] Am. Jour. Obstetrics, November, 1904.
[2] Am. Jour. Obstetrics, April, 1905.

treatment of eclampsia. During the last ten or twelve years the use of saline injections, either in the rectum or under the skin, has been favored as one of the most efficient and harmless means of securing rapid and thorough diuresis. If it is true, according to the recent theories, that the withdrawal of salt in cases of nephritic edema is as beneficial as claimed, the good result does not necessarily prove that salt is an irritant to the kidney and disturbs its functions, but it may be due simply to the absorption of effusions that cannot exist in the absence of salt. Whatever the explanation of the clinical phenomena, the new teaching will make us very cautious about using salt solutions for the prevention or treatment of eclampsia. Water alone, when given in large quantities, increases the amount of urine, but it may not increase the solid urinary constituents in proportion, and an excessive ingestion of water is liable to be harmful and should not be countenanced. Water injected into the bowel to flush out the colon is always valuable.

A priori he believes it is better to give rest to a kidney already injured and inadequate than to irritate it by irritants. Accordingly, he would exclude nearly all the diuretics, as very few of them are free from the suspicion of irritating the renal tissue. This rule excludes specifically the metals, coal-tar products, volatile oils, digitalis, aloin, urotropin, as well as most of the salts of the alkalies. The caffein group is excepted. For intestinal elimination he would limit himself to the saline cathartics, calomel, and castor and croton oil. Edema and its effects are relieved by sweats. The sweat should be given daily, generally in the forenoon. For convulsions he would use anesthetics only when an operation is to be done. To control the convulsions he favors the hypodermic use of morphin, begininng with an initial dose of from ⅓ gr. to ½ gr. when the patient is first seen, and then giving from ¼ gr. to ½ gr. after each subsequent attack until from 1 gr. to 1½ gr. are given. Danger of asphyxia is avoided by the use of oxygen. Veratrum viride he regards as a dangerous heart poison which can well be discarded from our armamentarium. Oxygen inhalation is especially indicated during an attack when there is great danger of asphyxiation. In case morphin is given in large doses oxygen should be used to counteract the slowing of the respiration, and it should be administered constantly when an anesthetic is given. It is one of the first things to be procured when taking charge of a case of eclampsia. The conditions existing after the successful delivery of the patient either spontaneously or by operative measures call for supporting or symptomatic eliminating treatment in which besides the agent already mentioned strychnin and nitroglycerin may be valuable.

SEVERE HEMORRHAGE FROM THE BLADDER IN PREGNANCY.

Kubinyi[3] was called to attend a pregnant woman for acute retention of urine. Four former pregnancies had been normal. The condition was critical; there was nausea, vomiting and evidence of acute internal hemorrhage, with bladder distended and rupture threatening. The patient had passed a little bloody urine three days before, but none since. The catheter, also a double-current injection tube, brought away only a little blood. The urethra was dilated up to No. 16, and a finger introduced into the bladder extracted about a pound of clots and several pints of bloody urine followed. The following day urine was voided normally and there was no further hematuria. The patient had varicose veins in the extremities and rupture of a varix in the bladder was made out.

EARLY SIGNS OF PREGNANCY.

Sarwey[4] believes in the possibility of diagnosing pregnancy as early as the eighteenth week, and in fourteen cases he was able to detect the fetal heart sounds at this date. He says that auscultation must be kept up for twenty or thirty minutes or longer before the fetal heart sounds become audible, and he believes that the birth is liable to alter the fetal heart action to such an extent that heart sounds audible before it cannot be detected afterwards. On the other hand, von Herff has never been able to detect the heart sounds so early. He intends trying a curved stethoscope in the vagina. He has been unable to detect the heart sounds even after birth in fetuses from the twelfth to the sixteenth week of pregnancy which were kept alive in warm physiologic salt solution.

He believes that there are other early signs of pregnancy. Rapid increase in the size of the uterus and contractions of the fundus are signs of pregnancy. Patches of deep bluish red, or reddish purple, lying in stripes in the depths of the crevices in the vaginal mucous membrane, especially near the urethra, he regards as characteristic, while mere livid bluish discoloration is frequent outside of pregnancy, in case of disturbances in the circulation from any cause.

POSTPARTUM HEMORRHAGE.

Loveland[5] doubts if there is any benefit to be gained by packing the uterus with gauze in postpartum hemorrhage, but the dangers are evident. Late experiences, not only in postpartum hemorrhage but in other conditions in which uterine hemorrhage is feared, as after curetting for abortion, or miscarriage in the early months of pregnancy, have firmly convinced him that it is not wise to put anything into or leave anything in the uterus, even though impregnated with antiseptics, when it can possibly be avoided.

CESAREAN SECTION AND PLACENTA PREVIA.

Douglass[6] takes a very conservative position in regard to this subject, and endeavors to answer the question whether or not the operation is ever justifiable. From the standpoint of his own

[3] Zentralbl. f. Gynäk., 1904, No. 48; Brit. Med. Jour., May 6, 1905, p. 71. (Epit.)

[4] Jour. Am. Med. Assoc., 1905, xliv, 915.
[5] Am. Med., April 15, 1905.
[6] Am. Med., Jan. 21, 1905.

experience, which he allows is insufficient, but which, nevertheless, must have influence with him, he believes the operation is justifiable in certain cases. In his own practice he has done three Cesarean sections and three Porro operations, all six of the mothers recovering. Two of these cases were operated at night, in log huts, with insufficient light and assistance, in remote country districts, amid surroundings in every way unfavorable. He believes the ordinary mortality for Cesarean section in other conditions than placenta previa is about 10%. The reasons for a higher mortality in Cesarean section for placenta previa than in the elective operation are, that it is an operation of emergency; sufficient time cannot be granted for proper preparation; the patient may have bled freely and in all probability she has been exposed to infection through repeated examinations. These factors all serve to increase the maternal mortality and separately or combined may constitute absolute contraindication to operation. He would say that Cesarean section is indicated in cases of central attachment of the placenta in a primipara, with an undilated and rigid cervix, with moderate hemorrhage, a viable child and the operator a capable abdominal surgeon.

Holmes,[1] on the other hand, objects strenuously to the indiscriminate application of Cesarean section for placenta previa. He believes that American and Italian physicians, who alone are treating this obstetric complication by laparotomy, will regret their advocacy of the procedure when the reaction comes. Thus far the operation for placenta previa, *per se*, has not been performed by an obstetrician whose experience would permit him to speak authoritatively. Holmes' conclusions are that Cerarean section for placenta previa lowers the fetal mortality 30% and raises the maternal death-rate nearly threefold; approximately the life of one mother is taken to save the uncertain existence of one baby. A rigid os is one of the rarest complications of placenta previa. A true cicatricial cervix and rigid cervices of old primiparæ may offer an indication for Cesarean section in placenta previa. Placenta previa cases appropriate for Cesarean section will generally demand the procedure irrespective of the fetal condition, as the primal motive should be to save the mother and only as a last resort.

(To be continued.)

Reports of Societies.

AMERICAN MEDICAL ASSOCIATION.
SURGICAL SECTION.

PORTLAND, OREGON, JULY 11, 12 AND 13, 1905.

WEDNESDAY MORNING. — Continued.

(Continued from No. 6, p. 172.)

LIP OPERATION FOR CANCER AND DEFORMITY WITH REPORT OF CASES.

DR. W. W. GRANT of Denver, described a new operation for carcinoma of the lips and deformity of the mouth, which he considered superior to the ordinary operation. He makes straight incisions on each side connected by a straight transverse incision at the base, the gap left being a quadrangle. The flap was formed by incisions obliquely downward and backward from each lower angle of the wound; the triangular cheek flaps were separated from the inferior maxilla and united in the middle line; the angles of the mouth were incised and covered with underlying mucous membrane, so that no denuded surface was left, no grafting was necessary, and the chin tissues were undisturbed unless invaded by disease. From the oblique lateral incisions the sub-maxillary glands were removed and the anterior triangle could be explored. He considered the operation appropriate and useful for complete and partial excision and gave the details of five cases in which this method had been employed.

ESOPHAGECTOMY WITH REPORT OF CASE WITH PROTHETIC APPLIANCES.

DR. WALLACE L. TERRY of San Francisco, showed a patient from whom he had removed the upper portion of the esophagus down to the level of the sternum for recurrent carcinoma, having previously done a total laryngectomy. He believed that the case was unique on the Pacific Coast and would be of interest because of the prothetic appliances, one being used for the esophagus and another as a phonation apparatus.

CANCER.

DR. WM. M. RODMAN of Philadelphia, considered that cancer was increasing in frequency, that the parasitic theory had not been proven, that the weight of evidence was against it and that prolonged irritation was seemingly the most reasonable cause. The general belief that benign growths frequently undergo cancerous change, if superficial warts and moles be excepted, he claimed could not be proven, as it was of infrequent occurrence; while sarcomatous change was more frequent. He stated that prognosis varied with the variety of growth, age of patient, etc. and that diagnosis should be made as *early* as possible, supplementing the ordinary clinical means by the microscope if necessary. The only safe treatment, in his opinion, consisted in *free* and *early* excision. He considered that whereas superficial squamous epitheliomata might be treated successfully by the caustic and the x-rays, other varieties were more often made worse instead of better by such treatment. Where it could be shown that a pre-cancerous stage existed operation should be done at once, but it was at first necessary, in his opinion, to show that this stage did exist and impressions should not be accepted as facts.

REPORT OF SIX CASES OF OPERATION ON THE INTESTINES OF WHICH FIVE WERE FOR CANCER.

DR. BOUCHER of Hartford, Conn., detailed in full the six operations referred to, together with the results obtained in each.

DR. J. G. SHERRILL of Louisville, Ky., commented on the resemblance between appendicitis and cancer of the intestine, and expressed surprise at the frequency of the latter condition. He looked upon the exploration of the breast as a dangerous procedure unless the breast was removed immediately thereafter.

In his experience, the glandular involvement which so frequently followed cancer was not present in cancer of the intestine.

DR. C. O. THIENHAUS of Milwaukee, was opposed to the removal of warts simply because they might become malignant, and only urged their removal when signs of irritation were present. In cancer of the breast he advised not only the removal of the pec-

[1] Jour. Am. Med. Assoc. May 20, 1905.

toralis major and minor, but suggested that it might even be wise to extend the incision over to the linea alba.

DR. J. J. HAMILTON of Idaho, reported a case of cancer of the rectum in a man seventy-one years of age who, in the Dr's opinion, could not stand an operation and requested information as to the advisability in this case of making an artificial anus.

DR. J. CLARK STEWART of Minneapolis, called attention to the fact that carcinoma disseminated through the lymphatics and that epithelioma disseminated very much more slowly than any other form of carcinoma. He spoke in favor of always removing sufficient outlying tissue to avoid the further spreading of the disease and urged the removal of the lymphatics in connection with an epithelioma of the lip. He expressed the opinion that the V-shaped operation had been an outrage on humanity. He described his method of operating in these cases and stated that, with a properly done operation, the results should be much better than 75%.

DR. MCLENAHAN of Baltimore, thought the limit of operative interference had about been reached in cancer of the breast. He insisted that the recognition of cancer by exploratory incision could be done by the naked eye if one knew the appearance of benign tumors, and he looked upon the naked eye diagnosis as not only as good as the frozen section, but safer. He urged the removal of the glands of the neck in all early cases if not in late ones, and considered that if this were not done the operation was only a palliative one. He dwelt on pain as a symptom of onset, although he said he would not make a diagnosis of carcinoma simply from a pain in the breast; in fact, if a pain had been present in the breast for three months and at the end of that time no tumor was to be found he would consider that a pretty good sign of the pain being due to neuralgia or something of that kind.

DR. MARTIN of New Orleans, expressed surprise that Dr. Warren's recent statistics referred to cancer of the breast as being rare in the negro and stated that the statistics of New Orleans showed that the two races were about equal although the negro was much less likely to come for treatment. He reported having operated upon eighty cases out of about two hundred, and urged the absolute necessity of removing all neoplasms of the breast as soon as they were found. He spoke in favor of physicians and surgeons educating their patients to this point of view, the same as gynecologists have done in connection with pelvic diseases.

DR. A. H. LEBINGS of Milwaukee, looked upon traumatisms, chronic irritations and chronic inflammations as powerful predisposing causes of cancer. He disagreed with Dr. Rodman as to phimosis being a cause of carcinoma, as in the only two cases of cancer of the pevis he had seen phimosis had surely been a predisposing factor. He commented at some length on the relationship between tuberculosis and cancer and gave an instance of this association occurring in one family. In his experience, where a fair family history could be obtained over 70% of all cases of cancer gave a distinct history of tuberculosis in the family. While he said Koch's bacillus was not by any means a cause of cancer, yet he felt quite sure that it could produce a cellular weakness which predisposed to the cancerous state.

DR. RIXFORD of San Francisco, spoke in favor of the radical operation being done early, as he believed the patient's best chance was in the first operation.

DR. PARHAM of New Orleans, described a method recently reported in German literature of operating on the lip, which he believed would be the operation of the future. He also stated that a Commission had been appointed in New Orleans to look up the question of the Doyen serum, and that in the eight cases in which it had been used the results were absolutely negative.

DR. E. M. SALA of Rock Island, reported the case of a man who cut his throat with a razor, passing through the larynx and esophagus, but missing all the important blood vessels. After twice being sewed up, unsuccessfully, feeding was commenced through a tube, but at the end of two weeks the man insisted on attempting to take food through the mouth. He proved successful in doing so and since that time the esophagus has granulated over.

WEDNESDAY AFTERNOON.

DR. JACOB FRANK of Chicago, reported a case similar to Dr. Terry's on whom he operated about five years ago for cancer of the larynx, removing the larynx and the esophagus. The important point was that the patient was able to articulate after the operation sufficient to be understood in a room with a seating capacity of 300. He stated that his operation differed from Dr. Terry's in that he tried to close the wound, which was probably the reason for the re-establishment of false vocal cords.

DR. CHARLES A. POWERS of Denver, considered that a man of forty or over with a persistent leucoplakia was in danger of the development later, of cancer.

DR. RODMAN, in closing, heartily approved of the operation described by Dr. Grant, and referred to his own method of controlling hemorrhage in similar and in hair-lip operations. He considered that pain in the breast was no more a feature of cancer in the early stages than it was of adenoma or fibroma, but in the late stages, when the cancer had become adherent or was ulcerating or both, pain was important.

DR. GRANT, in closing, showed some photographs illustrating various stages of his operation and described them in detail. He stated that he had used the x-ray for six months in all his cases and that in every one the condition was aggravated.

DR. TERRY, in closing, expressed the hope that he would be able to do even better for his patient than he had done so far.

A NEW METHOD OF INCISING AND SUTURING THE LIVER TO RE-ESTABLISH ITS CONTINUITY AND FOR THE CONTROL OF HEMORRHAGE.

DR. JACOB FRANK of Chicago, described his operation at considerable length and also the results of his experiments on the suturing of the livers of dogs.

GALLSTONES IN THE COMMON DUCT.

DR. W. D. HAGGARD of Nashville, Tenn., detailed a number of cases and also referred to the statistics of various other operators. The causes and symptoms were dwelt upon and also the differential points between tumor and stone obstruction.

NON-CALCULOUS CHOLECYSTITIS.

DR. DAVIS S. FAIRCHILD of Des Moines, Iowa, considered that about 4% of the cases presenting the symptoms of gallstone disease had no stones, and he referred to the various conditions often associated with this disease.

DR. A. G. MCLAREN of St. Paul, considered that Dr. Frank's operation had proven that the liver was not such a serious organ to attack as had been supposed. He expressed the opinion that Dr. Haggard was right in looking upon stones in the feces as an indication of more stones in the common duct. Referring to Dr. Fair-

child's paper, he reported having found in ten cases of perforation of the gall bladder, two of the non-calculous variety.

Dr. Miles F. Porter of Ft. Wayne, did not believe that stones in the feces *always* meant that there were more in the gall bladder.

Dr. Grothan of Nebraska, took exception to the statement that stones in the feces necessarily meant more stones in the gall bladder.

Dr. Cooper of San Francisco, spoke of the value of position and of jolting in producing symptoms otherwise not obtainable. He also laid stress on the importance of the epigastric murmur when present. The value of the x-rays in assisting in diagnosis was also alluded to.

Dr. J. A. Ochsner of Chicago, detailed three important points which he considered were brought out by Dr. Frank's paper. He also stated, in commenting on Dr. Haggard's paper, that obstruction of the common duct no longer called for immediate operation and as a result the mortality was growing less.

Dr. J. H. Carstens of Detroit, described an instrument recently invented by Dr. Ross for use in the removal of gallstones. He also expressed the opinion that many cases of gall-bladder trouble were diagnosed and treated by gastro-enterologists as acute gastritis.

Dr. W. J. Mayo of Rochester, Minn., approved of the method described by Dr. Frank for controlling hemorrhage in operations upon the liver. He reminded those present of the fact that while a certain number of cases of operation on the gall bladder would do well certain others would surely do badly. He heartily agreed with the opinions expressed by Drs. Haggard and Fairchild.

Dr. J. J. Hamilton of Idaho reported a case of a man who operated upon himself without an anesthetic, successfully removing several stones and making a good recovery.

Dr. Frank in closing urged that liver surgery be put on a plane with appendiceal surgery.

Dr. Haggard in closing objected to taking the statements of patients that they had been passing stones following the taking of olive oil unless the stones were produced.

Dr. Fairchild in closing, stated that some of the most serious difficulties arose in cases where no stones were found.

Penetrating Wounds of the Abdomen.

Dr. R. Winslow of Baltimore, gave the statistics taken from the records of the Civil war and from the literature on the subject to date as well as related his own personal experience in civil practice.

Dr. Cooper of San Francisco, related his experience in the South African war, reporting one case which doubtless owed its recovery to the fact that the stomach was empty at the time of injury, and another in which the bullet was found in the rectum, there being no wound of exit.

Dr. Floyd W. McRae of Atlanta, Georgia, commented on the frequency of pistol wounds in the south and called especial attention to the danger which existed when the mesentery was separate from the bowel. He also spoke against lavage of the peritoneal cavity in these cases except under unusual circumstances.

Dr. DeForest Willard of Philadelphia, advised posterior drainage, where good work could be done with a dry toilet.

Dr. Boucher of Hartford, considered drainage a decided disadvantage.

Dr. Winslow, in closing, felt that plenty of water should be used in certain cases but not in others. He insisted upon the importance of drainage being employed.

Meckel's Diverticulum as a Cause of Abdominal Crises.

Dr. Miles F. Porter of Ft. Wayne, stated that he had seen four of these cases within a few months. He described them in detail and also reviewed the literature on the subject and stated that bowel obstruction was the most common cause of the condition.

Dr. R. Winslow of Baltimore, reported two cases, one occurring in a hernia and resulting fatally.

Dr. W. Jepson of Sioux City, Ia., reported having had three cases and expressed surprise that this remnant was not found more frequently.

Dr. Porter, in closing, called attention to the statement that in cases of intussusception the mucous membrane alone was turned in and stated that in the three cases he had examined it had included all the coats.

Phlebitis following Abdominal Operations.

Dr. A. H. Cordier of Kansas City, dealt with this subject at considerable length under eleven different headings.

Dr. C. O. Thienhaus of Milwaukee, referred to the importance of the Trendelenburg position where a thrombus was suspected.

Dr. A. Goldspohn of Chicago, suggested an anatomical explanation for the more frequent occurrence of this condition on the left side.

Dr. Cordier, in closing, did not agree with Dr. Goldspohn's theory.

Anerobic Cellulitis with Report of Successful Cases.

Dr. J. Clark Stewart of Minneapolis, gave a detailed report of several cases together with his method of treatment. One case occurred in a man over seventy years of age, the cellulitis occupying the whole abdominal wall.

This paper was not discussed.

(*To be continued*)

Recent Literature.

Diseases of the Heart and Aorta. By Thomas E. Satterthwaite, M.D., Professor of Medicine in the New York Post-Graduate School, Consulting Physician to the Post-Graduate Orthopedic and Babies' Hospitals, President of the Medical Association of the Greater City of New New York. New York: E. R. Pelton. 1905.

The attempt to bring within covers as a systematic textbook occasional papers treating different details of the same general subject, with added material especially prepared to fill obvious groups in what aims to be a comprehensive treatise, is not likely to be successful. With the abundance of adequate works now at hand, treating exhaustively the topics covered by this book, a newcomer can hardly expect a very enthusiastic reception unless presenting some marked improvements in manner of presenting the accumulated facts of current knowledge. For the student the present work cannot be recommended; for the practitioner it would hardly justify the expense of adding one more to his shelves.

THE BOSTON

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THE MEETING OF THE BRITISH MEDICAL ASSOCIATION.

The annual meeting of the British Medical Association has long since ceased to be an event of merely local interest. The character of the contributions presented at each successive meeting marks, in a general way, the progress of medicine in the British Empire, and this must of necessity be of vital interest to the remainder of the medical world. The association has naturally grown very complex in its organization, and no doubt somewhat difficult of management. Nevertheless, each year shows a most successful meeting, both on the social and scientific side, however large the number of people to be cared for and heard. This year the meeting, which was the seventy-third in the history of the association, was held at Leicester, from July 25 to July 28, inclusive. The association had never before visited this historic town, and Mr. George Cooper Franklin, this year's president, prefaced his remarks on "Medical Education" by a brief historical sketch of the town, which no doubt added much of interest to the stay of the visitors. The city has given many men of great prominence to the medical profession, and it was fitting that they should be brought out of the obscurity with which time has surrounded them. Among these were Gulston, Cheselden, Halford, Richardson and Paget. Regarding medical education, Mr. Franklin felt that the future offered many problems, but in general his attitude was optimistic, although he saw dangers in the modern development of specialism — dangers, however, which are essential to progress.

Dr. Henry Maudsley delivered the address in medicine, which, as might have been expected, was a scholarly and philosophical presentation of the present state of the profession and of its future possibilities. Written in a style which Maudsley has made peculiarly his own he reviews with a not altogether hopeful spirit the shortcomings of our present methods, our over-enthusiasm in certain directions and our general lack of knowledge in many others. He recognizes the obvious fact that the future work in medicine is likely to be largely preventive, and herein lies an opportunity for the physician which offers much for the future, however exceptional at the present time the chance may be of reaching the bedside of a patient before his disease has taken firm hold upon him. He argues also against the idea of abstract disease as a so-called morbid entity. "To treat the same disease in the same way in all persons is to do much like the tailor who supplied all his customers with clothes made to the same measure, without taking their particular measures. If doctors give physic but seldom take it, — as the old gibe is, — may not that be because, knowing something of their own constitutions and of the causes and beginnings of disease, they adopt timely measures of precaution and a system of treatment sorting with their habits and temper of body and mind?" This idea of the individuality of disease is far too often overlooked by practitioners and may certainly be regarded as one of the sources of failure in the treatment of many commonplace maladies. We have in this community recently heard a somewhat similar opinion expressed on the subject of individual hygiene. Rules cannot be too strictly laid down, and each case must be treated on its individual merits. If Maudsley had said nothing further than this, his address would have been well worth while. This at least serves as an example of the tenor of all his remarks, abounding in common sense and wholesome advice, expressed in almost aphoristic form. Speaking of the care bestowed upon the degenerate and diseased elements in the community, and pointing out the unfortunate results which must inevitably result in the future, he sums up the situation as follows:

"Human life is so precious nowadays in all its states — phthisical, insane, criminal, inebriate, and the like — that it is the pious duty of the social organism not, as the healthy bodily organism tries to do, to extinguish or extirpate a morbid element, but to absorb it into its system, growing sympathy being the vital principle of social growth. The medical man, at all events, can plead his duty to his individual patient; he is not sponsor for the nation's future; that he leaves to those whose business it is. Still, a

skeptical-minded person — he would be called a cynic — looking to the ultimate issue of such morbid absorptions might be tempted to exclaim with the prophet — 'My people love to have it so, and what will ye do in the end thereof?'"

One would hardly expect in an address from Dr. Maudsley that the subject of mind and body should be wholly ignored. He touches upon it here in a way which could be an offence to no one and which must most certainly appeal to the more thoughtful men in the profession who see in the extraordinary relationship the real problem of the future, as it has been of the past. It is quite impossible in the space at our command to discuss at length this or many other matters to which allusion is made, but we cannot leave the address without a final quotation:

"For my part, I cannot doubt that a positive science of human nature, as it gradually emerges into form, will make it ever more and more plain that, by operation of natural law in the process of organic evolution, sound thought, good moral feeling and devotion to a high ideal are the solid foundation of health and wealth of mind in individuals, in families and, through families, in nations; that there was, indeed, a measure of scientific truth in the saying of the Hebrew seer, who, looking on the generations of old, declared that those who sow upon the furrows of unrighteousness shall reap them sevenfold."

In the yearly list of medical addresses few attain the distinction which belongs to this of Dr. Maudsley.

The address in surgery was a scientific presentation by Mr. C. J. Bond of matters relating to mucous canals, gland ducts and infection. As an investigation the address is no doubt of much value, and, in conjunction with Dr. Maudsley's somewhat theoretical discussion of the future of medicine, is of interest as showing the different attitudes of mind on the part of the two great divisions of professional work. The section meetings took up the innumerable matters which are now interesting the various departments of medicine, and the meeting adjourned on the fifth day, having covered a great amount of ground and no doubt served as a source of inspiration to many of the members for the year to come. The next meeting will be held in Toronto, Canada, and on that occasion should have the attendance of many physicians resident in the United States.

IMPERIAL CANCER RESEARCH FUND.

The second number of the scientific reports on the investigations of the Imperial Cancer Research Fund has recently been published. This number contains two parts published in separate pamphlets, the first on the statistical investigation of cancer, and the second on the growth of cancer under natural and experimental conditions. The statistical investigations which have been going on for several years are now recorded for the first time, together with certain experimental studies.

Including under the term cancer all forms of malignant new growth, the attempt has been made to gather statistics which will be of some scientific value. This is manifestly a difficult matter, inasmuch as diagnosis is frequently at fault, and, in the second place, since the study of cases at hospitals gives no proper conception of the existence of the disease in the population at large. It is, therefore, not possible to determine whether cancer is actually increasing, although there is a definite increase in the number of recorded cases. Efforts are being made to overcome the natural fallacy of such statistics, and it is hoped, through the co-operation of metropolitan hospitals and by other means, to collect facts which will be of positive value. The combined study of cases reported in metropolitan hospitals and in the national mortality returns has already given information of value, as, for example, that sarcoma probably increases in frequency as life advances in a precisely parallel manner to that long recognized as a characteristic of carcinoma. This is at least suggestive of a closer identity between the two types of growth than is ordinarily supposed. Other matters of importance which the statistical method is likely to elucidate are the age periods at which malignant disease appears in the different organs of the human body, particularly in relation to the time of appearance of similar new growths in animals of varying longevity; the relative frequency of cancer in various races with special reference to diet as a predisposing factor; and finally, it has been demonstrated that the value of collaboration on a large scale is likely to prove of great scientific importance. The pamphlet is taken up with a detailed elucidation of the various matters above suggested, and is of much interest as indicating one of the useful lines along which further investigation may profitably be extended.

The second part, on the growth of cancer under natural and experimental conditions, is a continuation of work suggested in a former report. Here an attempt has been made to study the zo-ological distribution of cancer with special reference to further study of the cancer cell. However difficult and discouraging this branch

of the research may be, it is regarded by this Commission as of sufficient value to prosecute further. The investigation hitherto made appears to show that the final explanation of the attributes of cancer must center round the explanation of the problem of continued proliferation and the question of whether this growth may be further analyzed. Serious experimental work along this line has not been done, and it is maintained that a study of the processes of growth is a problem of the utmost importance. Skepticism regarding the demonstration of cancer in the mouse comparable with that found in man should be dispelled. It is asserted that carcinoma of the mouse has been artificially propagated for three and a half years after the death of the animal in which it originally appeared. Success has also been attained in growing other tumors. Such experimental work is clearly of great significance and offers at least a hopeful opportunity for the solution of some of the problems. This subject occupies the greater part of the second pamphlet and is well illustrated by detailed drawings.

However far we may be from the ultimate solution of the question at issue, there can be small doubt in the minds of those who look over these contributions that progress is being made, and that at least the immediate future will see the final problem stripped of much detail which is a necessary forerunner of any comprehensive investigation.

THE PATENT-MEDICINE EVIL.

It is a happy sign of the times that certain lay periodicals are beginning a campaign against the popular advertisement of quack remedies. *Collier's* has recently entered the lists and is vigorously opposing the insertion of certain patent-medicine advertisements in the columns of the secular press. It is clear that so-called patent medicine is profitable in great measure because of the skill used in its advertisement. It is equally evident that if the papers and periodicals which are read by the masses could in general rise to the position which *Collier's* and some others have taken the patent-medicine evil would suffer at least a partial eclipse. In this connection it is somewhat discouraging to note that one of our leading daily papers gave up the entire second page of one of its issues this week to the advertisement of a secret nostrum, pushing news of importance to a less conspicuous place in its columns. We naturally sympathize with the effort which *Collier's* is making and have no question that its influence will spread far beyond the immediate readers of that journal.

MEDICAL NOTES.

Sir Patrick Manson in San Francisco. — Sir Patrick Manson has reached San Francisco, where he is to deliver a course of lectures on tropical diseases.

Typhoid Fever in Washington. — A considerable epidemic of typhoid fever is reported as existing in Washington. The cases are not confined to any one district, and throughout the District of Columbia from July 1 to Aug. 9, 21 deaths and nearly 200 cases were reported.

Yellow Fever. — The condition regarding yellow fever at New Orleans shows improvement. The epidemic, according to Dr. Guiteras, will soon be under complete control and the city free from infection. On August 15 the total number of cases reached 1,031, with a total death list of 171.

Centenarians. — It is announced that Jerome B. Osier, said to have been the oldest inhabitant of Illinois, died recently in Chicago at the age of one hundred and five. Mrs. Mary Cunningham, said likewise to have been the oldest woman in Maine, died this week in Bangor at the alleged age of one hundred and five.

Sensations in Falling from a Height. — A telegraphic report from Geneva states that Professor Hein, geologist and Alpine climber, recently reported before the Swiss Alpine Club the sensation of falling from a precipice. Contrary to the generally accepted idea, he stated that his breathing was not interfered with, that he was not terror stricken, but felt tranquil and mentally active. Many events in the past passed rapidly through his mind, some of them long forgotten. On striking the ground he had the sensation of hearing soothing music and lost consciousness without pain or any feeling of shock.

Registration of the Portland Meeting, American Medical Association. — The registration of the Portland meeting of the American Medical Association, as given in the current number of the *Journal* of the Association, shows that the Section on the Practice of Medicine had the largest registration with 494, Surgery and Anatomy coming next with 443, Obstetrics and Diseases of Women 168, Ophthalmology 105 and other sections all under 100. It is somewhat

surprising that the section having the smallest registration, only 18, was that on Pathology and Physiology. No doubt an explanation of this, as of certain of the other figures given, lies in the fact that the registration of members does not always correspond to the sections attended. Registration by states shows 217 from Oregon, 164 from California, 123 from Illinois, 30 from Massachusetts, 156 from Washington and one from the Philippine Islands. Many states were slenderly represented, but 51 sent one or more members.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, Aug. 16, 1905, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 32, scarlatina 4, typhoid fever 26, measles 12, tuberculosis 41, smallpox 0.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, Aug 12, 1905, was 236, against 236 the corresponding week of last year, making the death-rate for the week 19.52. Of this number 127 were males and 109 were females; 228 were white and 8 colored; 165 were born in the United States, 61 in foreign countries, and 10 unknown; 57 were of American parentage, 153 of foreign parentage, and 8 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 13 cases and 1 death; scarlatina, 8 cases and no deaths; typhoid fever, 19 cases and 1 death; measles, 14 cases and no deaths; tuberculosis, 28 cases and 24 deaths; smallpox, no cases and no deaths. The deaths from pneumonia were 10, whooping cough 2, heart disease 21, bronchitis 3, and marasmus 9. There were 16 deaths from violent causes. The number of children who died under one year was 73; the number under five years, 93. The number of persons who died over sixty years of age was 38. The deaths in public institutions were 67.

NEW YORK.

Improvement of Milk Supply. — The Health Department is making special efforts to improve the character of the milk sold in the city, and especially the condition in which the milk reaches consumers in the tenement-house districts in the hot weather. On several occasions during the summer the entire summer corps, including also the regular milk inspectors, numbering over one hundred, have been detailed for a number of days together to make inspections in the smaller shops throughout the city. The rules of the department require that milk shall be kept at a temperature of not over 50° F. During the first nine days of August over thirteen thousand quarts were condemned by the inspectors, and it is stated that much of this was destroyed for the reason that it was not properly cooled.

Typhoid Fever. — During the present season many more cases of typhoid fever, in porportion to the population, have occurred in certain portions of the Borough of Brooklyn than in any other section of the city, and here Dr. J. S. Billings, Jr., chief of the Division of Communicable Diseases in the Health Department, has instituted a house-to-house visitation by inspectors, with reference to the disease. The Department has also distributed circulars stating that it is well known that many of the wells in Brooklyn are contaminated, and urging that no well or spring water be drunk without first being boiled. Water from the city's mains is less liable to be contaminated, but in order to avoid all chances of infection it is advised that this also should be boiled. Precautions in regard to milk and protection against flies are also advised.

Decision Relating to Christian Science. — On Aug. 7, County Justice William P. Platt, at White Plains, Westchester County, handed down a decision sustaining the demurrers to the indictments against John Quimby and his wife, of White Plains, and John C. Lathrop, of New York City, Christian Scientists, for allowing the Quimbys' young daughter, Esther, to die from diphtheria without medical attendance. The subjects of the indictments maintained that they had right under the Constitution of the United States to care for their sick, whether minors or not, as they thought best, and this decision appears to sustain them in this contention. The Quimbys and Lathrop were indicted by the Westchester County Grand Jury, on Oct. 31, 1902, for manslaughter in the second degree, being charged with wilfully, wrongfully, culpably and neglectfully failing to provide medical treatment for the child, and after various motions to dismiss the findings of the coroner's jury in the case had been made they filed demurrers to the indictments. The child Esther was the second in the family to contract diphtheria, the first one recovering from the disease. No physician was called in in either case, but for Esther's illness Lathrop, who was or had been "second reader" of one of the Eddyite churches in New York, was summoned, and he gave her so-called Christian Science treatment to relieve her of her "error."

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, AUG 5, 1905.

CITIES.	Population Estimated, 1904.	Reported deaths in week.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diphtheria and croup.	Diarrheal Diseases.	Cerebro-spinal Menin-gitis.
New York	3,908,644	1,449	669	40.79	6.69	1.45	26.16	.83
Chicago	1,990,750	567	217	38.80	5.29	.53	21.75	—
Philadelphia	1,407,382	426	206	42.51	5.84	.93	25.22	.23
St. Louis	633,606	—	—	—	—	—	—	—
Baltimore	542,229	226	103	41.15	4.87	.88	23.89	—
Cleveland	444,251	—	—	—	—	—	—	—
Buffalo	400,645	—	—	—	—	—	—	—
Pittsburg	362,456	122	54	41.67	4.55	4.55	15.91	—
Cincinnati	338,577	—	—	—	—	—	—	—
Milwaukee	325,990	—	—	—	—	—	—	—
Washington	300,776	—	—	—	—	—	—	—
Providence	196,744	61	26	47.54	8.20	3.28	32.80	—
Boston	617,980	234	107	30.09	6.41	—	13.24	—
Worcester	136,925	50	22	38.00	4.00	—	18.00	4.00
Fall River	119,349	59	45	54.24	8.47	—	54.24	—
Lowell	104,402	39	18	35.90	2.56	—	20.51	—
Cambridge	100,926	29	11	51.72	3.45	—	31.03	3.45
Lynn	73,675	23	5	4.34	4.34	—	4.51	—
Lawrence	72,348	28	14	60.71	—	—	32.00	—
Springfield	73,090	16	4	12.50	—	6.25	6.25	—
Somerville	70,413	23	10	30.43	8.70	—	26.09	—
New Bedford	68,883	35	17	51.51	3.03	—	45.45	—
Holyoke	50,588	—	—	—	—	—	—	—
Brockton	46,951	7	1	14.30	—	—	—	—
Haverhill	46,510	8	3	62.50	—	—	37.50	—
Newton	39,081	18	5	44.44	—	5.55	27.77	—
Salem	37,305	12	7	41.65	—	—	41.65	—
Malden	37,188	10	5	60.00	10.00	—	30.00	—
Chelsea	36,449	11	—	18.18	—	—	—	—
Fitchburg	36,325	9	4	—	—	—	—	—
Taunton	34,577	18	9	50.00	—	—	50.00	—
Everett	30,309	5	1	60.00	—	—	20.00	—
North Adams	29,301	3	2	66.67	—	—	33.33	33.33
Gloucester	26,798	—	—	—	—	—	—	—
Quincy	26,121	7	2	28.60	14.30	—	—	—
Waltham	25,797	14	2	—	28.57	—	—	—
Brookline	25,576	6	2	—	—	—	—	—
Pittsfield	23,870	17	7	11.76	5.88	—	—	5.88
Chicopee	21,956	7	3	28.60	14.30	—	28.60	—
Medford	21,693	8	3	—	12.50	—	—	—
Northampton	20,514	10	1	20.00	—	—	—	—
Beverly	15,897	3	—	33.33	—	33.33	—	—
Clinton	15,711	3	2	—	—	—	—	—
Leominster	15,694	3	—	33.33	—	—	—	—
Newburyport	14,745	6	3	33.33	16.67	—	33.33	—
Woburn	14,551	6	1	—	—	—	—	—
Hyde Park	14,509	4	—	—	—	—	—	—
Adams	14,478	—	—	—	—	—	—	—
Attleboro	14,315	—	—	—	—	—	—	—
Marlboro	13,619	1	1	100.00	—	—	100.00	—
Melrose	13,609	3	1	—	—	—	—	—
Westfield	13,771	4	—	25.00	—	—	—	—
Milford	13,609	—	—	—	—	—	—	—
Revere	13,609	5	2	—	—	—	—	—
Framingham	13,974	—	—	—	—	—	—	—
Peabody	13,408	—	—	—	—	—	—	—
Gardner	12,294	—	—	—	—	—	—	—
Weymouth	11,716	5	1	20.00	20.00	—	—	—
Southbridge	11,575	6	4	50.00	—	33.33	16.67	—
Watertown	11,350	0	—	—	—	—	—	—
Plymouth	11,139	2	1	—	—	—	—	—

Deaths reported, 3,611; under five years of age, 1,605; principal infectious diseases (smallpox, measles, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 1,394; acute lung diseases 312, consumption 350, scarlet fever 12, whooping cough 33, cerebrospinal meningitis 19, smallpox 1, erysipelas 8, puerperal fever 8, measles 10, typhoid fever 46, diarrheal diseases 863, diphtheria and croup 43.

From whooping cough, New York 8, Chicago 4, Philadelphia 8, Baltimore 1, Pittsburg 6, Boston 4, Cambridge 1, New Bedford 1. From scarlet fever, New York 1, Chicago 1, Pittsburg 9, Boston 1. From cerebrospinal meningitis, New York 12, Philadelphia 1, Worcester 2, Lowell 1, Cambridge 1, North Adams 1, Pittsfield 1. From erysipelas, New York 4, Chicago 3, Pittsburg 1. From smallpox, New York 1. From typhoid fever, New York 13, Chicago 6, Philadelphia 8, Baltimore 4, Pittsburg 4, Providence 3, Boston 3, Cambridge 1, Lawrence 1, Brockton 1, Quincy 1, Pittsfield 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,609,377, for the week ending July 29, 1905, the death-rate was 15.0. Deaths reported 4,490; acute diseases of the respiratory organs (London) 46, whooping cough 82, diphtheria 33, measles 77, smallpox 1, scarlet fever 26.

The death-rate ranged from 3.0 in Burton-on-Trent to 30.7 in Bootle; London 14.3, West Ham 17.5, Brighton 10.2, Southampton 12.3, Plymouth 13.9, Bristol 10.8, Birmingham 14.0, Leicester 14.2, Nottingham 16.2, Birkenhead 17.5, Liverpool 23.7, Wigan 15.7, Bolton 17.3, Manchester 23.1, Salford 20.5, Halifax 15.5, Bradford 11.1, Leeds 19.3, Hull 15.4, Sheffield 22.6, Newcastle-on-Tyne 7.8, Cardiff 10.4, Rhondda 24.6, Merthyr Tydfil 24.0, Bournemouth 7.9, Tynemouth 7.8.

METEOROLOGICAL RECORD.

For the week ending Aug 5, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

DATE	Barometer.	Thermometer.			Relative humidity.			Direction of wind.		Velocity of wind.		Weather*		Rainfall in inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A.M.	8.00 P.M.	Daily mean.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	
S.	30	29.88	68	67	64	100	97	96	E	N	12	3	R.	R.	.17
M.	31	29.62	82	64	69	96	91	93	N	N E	13	15	O.	R.	.81
T.	1	29.94	83	66	66	94	84	89	N	E N E	13	4	R.	R.	.12
W.	2	29.93	88	72	59	88	70	89	N	W S W	9	6	F.	F.	.37
T.	3	30.00	76	68	61	92	81	86	N	W S	7	7	C.	C.	0
F.	4	30.04	72	68	61	91	82	86	W	S W	3	8	C.	C.	0
S.	5	30.06	75	74	64	80	71	76	S W	S	14	10	C.	C.	0
Av.		29.88			61			79							.37

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. Av. Means for the week.

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING AUGUST 12, 1905.

J. C. WISE, medical director. Orders of July 29, 1905, modified; ordered to report to the Surgeon General of the Navy, August 10, 1905, for duty in command of the Naval Medical School.

J. C. BOYD, medical director. Ordered to additional duty as President of the Naval Examining Board, and the Naval Medical Examining Board, Naval Medical School, Washington, D. C.

F. E. SELLERS, G. S. HATHAWAY, assistant surgeons. Appointed assistant surgeons, with rank of lieutenant (junior grade) from Aug. 1, 1905.

L. W. SPRATLING, surgeon. Ordered to the Naval Station, New Orleans, La.

J. L. TAYLOR, assistant surgeon. Detached from the Naval Hospital, Pensacola, Fla., Sept. 29, and ordered to Washington, D. C., Oct. 2, for course of instruction at the Naval Medical School.

SOCIETY NOTICE.

MEDICAL SOCIETY OF THE MISSOURI VALLEY. — The eighteenth annual meeting of this association will be held in Council Bluffs, Iowa, on Thursday and Friday, Aug. 24 and 25, under the presidency of Dr. S. Grover Burnett, of Kansas City.

RECENT DEATH.

DR. SETH BOGGS, a well-known physician of the Bedford district of Brooklyn, died suddenly from cardiac disease on Aug. 10. He was born in Brooklyn in 1852, and was graduated from the College of Physicians and Surgeons, New York, in 1886.

BOOKS AND PAMPHLETS RECEIVED.

The Cause and Prevention of Consumption. Circular Issued by the Illinois State Board of Health. Fifth Revised Edition. 1905.

The Nervous Symptoms Produced in Children by Uncorrected Refractive and Muscular Errors. By J. Herbert Claiborne, M.D. Reprint.

Color-Vision and Color-Blindness. A Practical Manual for Railroad Surgeons. By J. Ellis Jennings, M.D. Second Edition, Thoroughly Revised. Illustrated. Philadelphia: F. A. Davis Co. 1905.

Transactions of the Gynæcological Society of Boston. Boston. 1905.

Original Articles.

EMPYEMA OF THE FRONTAL SINUS.*

BY FREDERIC C. COBB, M.D., OF BOSTON.

THE subject of this paper is empyema of the frontal sinus. I shall not trouble you with any history of the disease, but will begin at once with the symptoms. One of the most important of these is headache, which varies in character in various cases, and even in the same case. Ordinarily the headache begins in the morning and lasts for three or four hours, ceasing about noon. It may, however, in some cases come on in the afternoon and last in the same spasmodic way for two or three hours, and then cease. Theoretically, the cessation of the headache should be accompanied by a free discharge of pus from the nose; but practically this is not always observed. The headache is evidently the result of pressure caused by pus in the frontal sinus, and its appearance in the morning is perhaps due to the fact that during the recumbent position the ostium of the sinus is not subjected to the same pressure that it is in the erect position, hence the collection of pus becomes greater in the morning.

The degree of pain varies in intensity, according to the pressure of fluid within the sinus, from a feeling of weight or pressure over the forehead to a dull pain, or even an intense pain. The character of the pain is described as beating or pulsating, but may be simply a dull ache or an acute neuralgia. Nor is it unusual to have frontal sinusitis without any pain, the whole question depending upon the pressure in the sinus.

And an even more variable symptom is tenderness over the sinus, which may be felt on pressing the upper wall of the orbit, taking care to avoid the supraorbital nerve.

The second symptom of importance is discharge from the nostrils. From the frontal sinus the discharge is not ordinarily very profuse. It may be yellow or greenish yellow, and alternate between very thick and quite thin. An odor disagreeable to the patient's perception, but not always so to the family or physician, is at times present, and a tendency to crusting or scabbing is very noticeable.

The amount of the discharge is subject to variations, depending upon the clearness of the nasal frontal duct, and when the pain, such as I have said is caused by the stoppage of the duct, is most severe the discharge should be less, and *vice versa*. It is here to be observed that the discharge resulting from the frontal sinus may flow either anteriorly or into the nasal pharynx, and this depends upon the position of the head or on various conditions within the nostril. It will be seen at once that this fact makes an estimate of the amount of discharge very uncertain.

A third symptom is stoppage of the nose. This is also a somewhat uncertain symptom, and is usually caused by irritation of the pus discharge. This irritation results in an hypertrophy of the turbinated tissue, over which the pus passes, or in polypoid formation, producing an increase in the thickness of the normal tissues. From the pus discharge results also an eczema of the edge of the nostril in many cases, which if unilateral is always significant of sinus disease.

We have mentioned in dealing with the symptoms of frontal disease some that are characteristic of lesions of this particular sinus, but others which, while occurring in this disease, might nevertheless at times be due to other neighboring sinuses. When the anatomical preparations are inspected it will be seen how great are the difficulties in diagnosis. The antrum, anterior ethmoidal cells and the frontal sinus open into a common infundibulum or canal, the opening of which is covered by the middle turbinate bone. Pus appearing under this middle turbinate can come from any one of these cavities. Even after ablation of the anterior end of the middle turbinate it is usually impossible by watching the discharge to ascertain from which sinus it comes, because some of the anterior ethmoid cells are so high up as to be out of sight intranasally. For our diagnosis of the origin of the suppuration we must therefore depend upon our ability to ascertain which of the cavities contains pus. Even when this is ascertained our difficulties are not yet over, for in the last few years it has been proved that the antrum may contain pus in quantity and nevertheless may not originate it, but simply serve as a reservoir for other cavities. This may seem too natural to require comment, and yet many antra have been operated upon again and again by every radical operation known to surgery, and with constant disappointment, owing to failure to recognize this fact. If this is true of the antrum it may also be true of some of the other sinuses, that pus existing in a cavity does not necessarily mean pus originating from that cavity. The means at hand of ascertaining whether or not the frontal sinus contains pus are as follows:

Externally, pain or pressure over the floor of the frontal sinus or its walls. This of course only applies to acute conditions in the sinus. It is important in this test not to press upon the supraorbital nerve, but rather on the outer portion of the orbit.

Examination of the nose may show pus under the middle turbinate. If so, it probably comes from the frontal, ethmoid or antrum. If no pus is seen the following methods may be used: Logan Turner advocates causing a vacuum with a Politzer bag, allowing the patient to swallow at the same time, thus producing a vacuum and drawing the pus down into the nostril. Or, if possible, a catheter may be passed into the sinus and air can be blown in by a Politzer bag, displacing the pus in the sinus, which at once appears in the region of the middle turbinate. Transillumination of the antrum gives us further information. If both antra are bright we can feel sure the suppuration is in ethmoid or frontal. If the antrum on the affected side be dark it probably contains pus, and if a trocar be introduced

* Read before The Massachusetts Medical Society, June 13, 1905.

through the lower meatus and the pus washed out it will reappear in a short space of time if it comes from the sinuses above the antrum; whereas if it originates in the antrum, it will take a considerable time to fill the antrum again.

Transillumination of the frontal will in some cases show disease there, but often fails to do so, as the light passes through the skin. An opening in the skin may be made under the eyebrow and a small opening into the sinus trephined; in case pus is found to be present the opening can be enlarged and the sinus cleared of pus and granulations. A small opening in the locality leaves only a slight scar.

Treatment. — Hajek recommends intranasal removal of obstruction in the fronto-nasal duct, and states that he believes this to be a procedure of great value It goes without saying that polypi and swelling of the middle turbinate should be removed, and the middle turbinate or its anterior end, to afford free drainiage. My experience however is that this procedure seldom cures chronic cases, although it may afford relief. So far as I know, most surgeons have abandoned it in favor of the more radical external opening.

Radical operations are as follows:

(1) Method of Nebinger-Praun. The incision goes from the naso frontal suture at the edge of the orbit to a point over the supraorbital notch. The anterior bony wall is chiseled away, then a vertical cut four to six centimeters long is made following the frontal vein. After opening, the contents of the sinus is wiped out and the mucous membrane scraped. The naso-frontal duct is then widened and curetted. The drainage of the frontal is secured by a wick at the base of the wound.

(2) Method of Ogsten-Luc. An incision at the inner third of the edge of the orbit, which may be lengthened either outwards or towards the root of the nose. The periosteum is pushed upwards and outwards towards the orbit. The opening of the sinus is a little to the outer side of the median line. The naso-frontal duct is curetted as well as the interior of the sinus and some of the anterior cells of the ethmoid. Through the wide communication with the nose thus made a drainage tube is put in and the outer wound closed. After eight days the bandages are removed. First drainage tubes were used between sinus and nose, but these were later replaced by strips of iodoform gauze.

(3) Method of Kuhnt. In this method the whole of the anterior wall of the sinus is removed, with its diseased mucous membrane, as also the upper part of nasal-frontal canal. The incision is as follows: a horizontal incision along the supra-orbital margin from the eyebrow to the outer third of the edge of the orbit; then a vertical incision from the inner edge of the wound through the soft parts of the periosteum. After lifting the soft parts and the periosteum the whole wall of the sinus is removed with chisel and bone forceps and the edges of the wound are smoothed. All projections into the cavity are thoroughly removed, the mucous membrane is most carefully scraped from the sinus and from the upper part of the duct. The wound is sewed up, leaving only room for a large drainage tube. This method has met with fair success, but causes considerable depression and does not remove the anterior ethmoid cells. When the disease is bilateral the cosmetic result is of course better.

(4) Jansen's method. Removal of the lower wall of the sinus and resection of the lower border of the anterior wall, curetting the mucous membrane of the sinus and of the granulation tissue. This method is not at present used by Jansen, but in 1903 he was doing a bone-flap operation of very much the same character as that practiced by Hajek.

(5) Method of Ridell. Removal of the anterior and lower wall of the sinus. Thorough and satisfactory except for the great deformity.

(6) Killian's method. Incision as in Ogsten-Luc, with supplementary incision beginning at root of nose and passing under inner edge of orbit. Incision is not carried through the periosteum of the arch of the eyebrow, but the soft parts are lifted and incision through the periosteum made a little higher up so as to preserve that of the arch. Removal of the whole anterior wall of the sinus with curetting mucous membrane and all inequalities of the bone. Incision then made in the line below orbit as described. Ethmoid cells entered through nasal process of maxillary bone and thoroughly curetted. Upper wall of orbit removed, allowing orbital fat to fill up depression caused by removal of orbital wall. Closure of wound without drainage.

(7) Coakley's method. Incision, as in Ogsten-Luc operation. Cavity thoroughly curetted with the assistance of electric lights placed in sinus. Nasal duct curetted but not widened, the object being to secure its closure; sinus then packed with gauze and repacked until it heals from the bottom.

The advantages and disadvantages of these methods may be summed up in a few words: the Ogsten-Luc has for advantage the slight deformity produced. For disadvantage it has the great probability of recurrence. The same is true of Jansen's method. Kuhnt's, Ridell's, and Coakley's methods yield less probability of recurrence, as they destroy the sinus, but they produce greater or less facial deformity, Coakley's probably giving the least of the three. To all of these methods there is one great objection — that the ethmoid cells are not sufficiently considered. Killian's operation seems to combine the advantage of sinus obliteration with the removal of the ethmoid cells; but it is hard to judge as yet of its practical results as far as deformity and danger to the eye are concerned.

THE LOCALIZATION OF CHRONIC SUPPURATIONS OF THE URINARY TRACT.

BY ARTHUR L. CHUTE, M.D., BOSTON.

As chronic suppurations of the urinary tract are almost always treated by local means, irrigations, instillations, massage, drainage or some-

times, as in the case of the kidneys, by ablation, the careful localization of the part of the tract involved is a very necessary preliminary to treatment. This localization must often even precede the determination of the nature of the process.

For the purpose of accurate treatment it is essential to localize a chronic suppuration of the urinary tract as involving one or more of the sections into which this tract is divided anatomically; namely, the anterior urethra, the posterior urethra, the bladder or the kidneys. Further, if the suppuration is of kidney origin it is necessary that we determine which kidney is involved. In conjunction with suppurations of the posterior urethra it is necessary to consider the prostate and vesicles which are most intimately connected with it, when one considers chronic suppurative processes.

While the treatment of a chronic urinary suppuration varies with the part of the tract involved, the symptoms are not sufficiently distinctive in a considerable proportion of cases to warrant one in basing his treatment on them alone, Though some men feel that they can definitely locate suppurative processes by the character of the sediment, the microscopical examination of the urine will very often leave one in doubt as to what part of the tract is involved. As a result of uncertainties of both symptoms and signs it is usual to apply certain tests to determine what portion or portions of the urinary tract are the seat of the suppuration. It is my purpose to call attention to some of the fallacies that may occur in the commonly-used localization tests, and to give those methods of localizing urinary suppurations that seem to me most accurate. The simplest and most-used tests for localizing urinary suppurations are the glass tests. They are used for the determination of the condition of the lower part of the urinary tract; more particularly to differentiate processes involving the anterior from those involving the posterior urethra. These tests are carried out by having different portions of urine passed successively into two or three specimen glasses, the precaution being observed that only a little urine (an ounce or two) is passed into the first glass. The two-glass, or Thompson's, test, the one most commonly used, is based on the fact that if there is any considerable suppuration in the posterior urethra the pus will flow back and mix with the bladder urine. In this test the urine in the first glass contains the products of suppuration which were in the whole length of the urethra at the time of micturition; the second glass any suppurative products which, having been formed in the posterior urethra, have been carried back and mixed with the bladder urine.

The inferences usually drawn from this test are: that the suppuration must be confined to the anterior urethra if there are shreds and pus in the first glass, but none in the second; while the posterior urethra and, possibly, the bladder are involved when both glasses contain shreds or pus. When the suppuration is profuse, as in acute inflammatory processes, this test is accurate. Then, however, the suppuration in the posterior urethra is not profuse enough to wash back in the bladder, but remains *in situ*, a condition common in chronic suppurations, all the suppurative material is washed out by the first gush of urine. As a result the first glass contains the shreds not only from the anterior urethra but those from the posterior urethra as well, while the urine in the second glass is clear provided the bladder is not involved. This as the test is ordinarily interpreted would indicate that the suppuration was confined to the anterior urethra.

It is then evident that the conclusions drawn from the application of this test to cases of chronic suppuration of the urethra, in which the amount of suppuration is small, are not to be depended upon. They are, I think, more likely to be wrong than right. I have repeatedly seen cases where due to this fallacy treatment has been applied to the anterior urethra, although more careful tests showed the lesion confined to the posterior urethra.

Under certain conditions the three-glass or Judassohn test, in which the urine is voided in three portions instead of two, is open to the same fallacy. The first glass contains, as in Thompson's test, all the shreds and pus which were in both the anterior and posterior urethra at the moment of micturition — the second any suppurative products from the posterior urethra that have mixed with the bladder urine, while the third, which should contain the last drops of urine in the bladder, will show an increase of suppurative material over that in the second, if the prostatic ducts are involved. This increase of suppurative material in the third glass is due to the fact that the complete and active emptying of the bladder causes a slight compression of the prostate and an emptying of its ducts of any material that they may contain.

Though the three-glass test is of more service than the two-glass test, it is subject to the same error as the two-glass test when the amount of suppuration in the posterior urethra is small, and has not involved the prostatic ducts. Under these conditions there is no reflux into the bladder and no suppurative material can be squeezed from the prostatic ducts; all the shreds and pus are contained in the first glass, giving the idea that the trouble is confined to the anterior urethra. I have on a good many occasions compared the results given by these glass tests with those given by the more accurate test to be described later, and have found that they are not to be depended upon when the amount of suppuration is relatively small, as is usual in chronic cases. It has often seemed to me that a part of the reputation of chronic urethral lesions for obstinately resisting treatment may be ascribed to a too implicit dependence on these tests.

A much more accurate test for determining the location of a chronic urethral suppuration is that of washing out the anterior urethra before the patient urinates. For this test, as for the glass tests, the urine should have been held for some time. The test is carried out in the following

manner: The anterior canal is washed with a weak solution of boracic acid or sterile water, either by means of a piston syringe attached to a soft-rubber catheter that is introduced to the cut-off muscle or by repeatedly distending and emptying the anterior urethra by means of a suitable tip attached to a piston syringe or connected with a reservoir. The urethra is irrigated until the wash water returns clear. The washings are put into a urine glass and inspected. If the wash water contains shreds it is practically certain that these shreds originated in the anterior urethra. The patient now passes a little urine into another specimen glass. If there are shreds in this urine we may feel pretty sure that they came from the posterior urethra; if they are in a clear urine we know that there is no suppuration higher up the urinary tract, if, however, they are in a turbid urine we are left in doubt as to the extent of the process. The consideration of the cases with a turbid bladder urine will be taken up a little later.

Although this method is much more accurate than the glass tests it is not without possibility of error, as there are some persons in whom the compressor urethræ relaxes under very slight pressure and allows the suppurative material to be washed from the anterior into the posterior urethra. If one suspects, in any given case, the accuracy of the results obtained by this method, one may substitute for the washing of the anterior urethra, wiping it out through an endoscopic tube.

The prostatic and ejaculatory ducts, opening as they do into the prostatic urethra, make it very easy for a suppurative process to extend from the urethra to the prostate and vesicles. In gonorrhea, which is by far the most common cause of chronic suppurative processes of the urethra, the prostate particularly is very often involved. In the examination of all cases of chronic urethral suppuration it is essential that the intimate relation between the posterior urethra and the prostate and vesicles be borne in mind, and that the condition of these organs be carefully investigated, though they cannot be considered, strictly speaking, as forming a part of the urinary tract.

This investigation is best carried out by expressing the contents of the prostate and vesicles by means of massage. When the bladder urine is turbid the bladder should be washed and filled with some clear fluid before the massage. In some cases it is possible to express by massage, first the contents of the prostate and then that of the vesicles. In most patients, however, this is hardly feasible and one must massage the prostate and vesicles as a whole. Usually the expressed material will appear at the meatus, and in many instances simple inspection will tell whether it is abnormal or not. When there is doubt the microscope will easily demonstrate the presence or absence of pus and bacteria. If the expressed material is suppurative in character we may feel quite confident that the prostate is diseased, as it is involved in a large proportion of cases of chronic suppuration of the posterior urethra. The more difficult question is whether or not the vesicles are also involved. Palpation has given some information as to their condition; the character of the urine or fluid passed after massage will give more. Very long gelatinous shreds, gelatinous masses, or large epithelium-like flakes indicate an abnormal condition of the vesicles. Microscopical examination of these masses will tell whether there is active disease or whether the vesicles are simply obstructed, due to the pressure of the inflamed prostate on the ejaculatory ducts. Pus, non-motile and deformed spermatazoa point to the first condition; relatively few pus cells, normal-shaped and sometimes feebly-motile spermatazoa, entangled in masses of partially inspissated mucus, point to the latter condition.

In the cases, in which after massage no material appears at the meatus, the patient should pass into a urine glass, a small amount of urine or of the fluid with which the bladder has been filled. If this fluid is slightly opalescent but without shreds or masses it is normal secretion. If the fluid contains shreds or masses it is pathological and should be submitted to microscopical examination for determining more definitely its nature and probable source.[1]

It at first seems a little strange that when any considerable amount of discharge forms in the posterior urethra it should flow back into the bladder, and yet when one massages a lot of material into the posterior urethra from the prostate and vesicles that it should appear at the meatus. I think the explanation of this undoubtedly lies in the fact that the massage brings about reflexly a swelling of the veru montanum, such as takes place normally in ejaculation, and that this swelling temporarily occludes the way to the bladder.

When in a case of *chronic* urinary suppuration all the urines are turbid, we are justified in supposing that the suppurative process involves the urinary tract higher up than the urethra. The question is, does the suppuration come from the bladder or from a kidney? If from a kidney, from which one? The symptoms may be very misleading. Frequent or painful micturition or both are usually supposed to indicate disease of the bladder. Yet there may be a considerable frequency of urination, sometimes attended with pain, that is solely due to a kidney lesion; or again the trouble may be primary in a kidney and mostly confined to it yet with a slight secondary bladder involvement that may give rise to either frequent or painful micturition or to both. Because there is no tenderness over a kidney one may not assume that the pelvis of that organ cannot be the source of a suppuration. In the past few months I have seen three cases of chronic urinary suppuration in which the symptoms pointed to the bladder as the probable source of the suppuration, and in which the patients had been treated on this assumption. In each of

[1] For a method of collecting separately the secretions of prostate and vesicles one is referred to an article that has appeared in this journal since the above was written: "Some Suggestions in Regard to the Diagnosis of Seminal Vesiculitis." By Hugh Cabot, M.D. BOSTON MEDICAL AND SURGICAL JOURNAL, 1905, Vol. cliii, p. 542.

these cases the cystoscope showed pus coming from a ureter, with very little involvement of the bladder. In two of these three cases there was no tenderness over either kidney, in the third there was moderate tenderness over the affected kidney.

The chemical examination of the urine will often leave one in doubt as to whether he is dealing with a suppuration of the bladder or of a kidney. An acid reaction, though it is suggestive, is not sufficient ground for assuming that the suppuration is from a kidney. In many cases no one would care to base his diagnosis between a bladder and a renal suppuration upon the amount of albumin. The microscopical examination of the urinary sediment is by no means conclusive. A suppuration of the kidney pelvis may give no casts, or so few that they are easily overlooked, and if to this is joined a secondary infection of the bladder the diagnosis from the sediment will be most difficult.

Of the simple methods for determining a bladder from a kidney suppuration, we have but one that seems to me of any value, and this is far from infallible. The method is as follows: Having secured, perferably by catheter, a specimen of the bladder urine and put it aside to use as a standard of comparison, one washes the bladder with boric solution until the wash water returns clear. One then uses gentle suprapubic pressure, to be sure that no solution remains in the bladder. The catheter is left in the bladder, and the urine, with the exception of the first drachm or two, which will be mixed with the solutions remaining in the catheter, is collected, and compared with the specimen previously drawn. If this collected specimen is as turbid as the drawn specimen it is fair to suppose that the suppuration is from a kidney. If the collected specimen is, on the other hand, clear, or very nearly so, we infer that the bladder is the probable seat of the suppuration. Corroboratory evidence of considerable value is often furnished by the behavior of the bladder during this test; ease in washing it clean, a good degree of distensibility, together with toleration to the presence of the catheter, point against the bladder being the seat of the suppuration. This test is occasionally satisfactory, but in a considerable proportion of cases it leaves one in doubt as to the source of the suppuration.

In case it has been determined by the above test that the bladder is not the source of the suppuration, we still have the question as to which kidney is involved. As a large proportion of these cases of kidney suppurations come to operative treatment, either some plastic of the pelvis, or nephrotomy or nephrectomy, this question is of the greatest importance. Here again symptoms must not be trusted too implicitly. I have called attention to the fact that a diseased kindey *may* not be painful or sentitive; on the other hand, one cannot be sure that because one kidney aches and is tender that it is necessarily the seat of the disease; the non-sensitive kidney may be atrophied and nothing but a chronic suppurating sac, while a moderate grade of pain and tenderness may be the result of compensatory hypertrophy in the active kidney. To this class belong, I believe, some of the cases in which a well kidney has been cut down upon because of pain, which, in light of the negative findings at the time of operation, has often been ascribed to the so-called reno-renal reflex, Whether this is true or not, the lesson is the same, that the aching kidney is not *always* the diseased one.

It therefore becomes necessary to supplement this test with the catheter by one of the various means of separating the urines of the two kidneys. For this one may employ the Harris segregator or the instrument of Cathelin or that of Luys. I have had no experience with the last two instruments, but the commonly-expressed opinion seems to be that they cannot be entirely relied upon, in men at least, any irregularity of the bladder floor being sufficient to make them inaccurate. The Harris segregator I have found very painful when I have attempted to use it in men, so much so that its use has not been at all satisfactory.

The utility of this catheter test for distinguishing between a bladder and a kidney suppuration is confined practically to those cases in which it shows that the bladder only is involved, and here it has the great disadvantage that it gives no information as to the extent or nature of the process. When it requires the use of special and complicated instruments to supplement it, as it does in the cases where it points to renal involvement, it loses its value, since it becomes quite as complicated as the cystoscope, while it is incapable of affording anything like the same amount of accurate information,

The more accurate way of determining bladder from renal suppurations is by means of cystoscopy, which is, I am convinced, the only precise method of localizing suppurations that concern any but the lower part of the urinary tract. The cases in which cystoscopy is impracticable are relatively few. With the modern instruments and perfected technic the examination can be made easily and usually without pain. In any but very sensitive bladders general anesthesia is unnecessary and undesirable. Not only can one localize the process with great accuracy in most cases, but one can at the same time determine the nature of the lesion when this is limited to the bladder. It allows one to recognize not only the commoner suppurative lesions of the bladder but also many of the unusual ones, some of which it would be all but impossible to determine without its aid.

The plain diagnostic cystoscope, besides giving one a comprehensive idea of the condition of the bladder can show one much regarding the condition of the kidneys. In the first place, the presence of two normally-placed ureteric orifices gives almost positive evidence that there are two kidneys. A swirl of clear urine, which looks like a little eddy of glycerin as it mixes with the bladder fluid points to a normal kidney; if with transparent urine issuing from the ureter there is absence of any change about the ureteric orifice

it is almost definitely settled that the kidney is not the seat of a suppurative lesion. When a kidney is the seat of any considerable suppuration turbid urine can be seen issuing in little puffs from its ureter; to this is often added the confirmatory evidence of a puffy ulcerated or patulous ureteral opening. The simple procedure of making pressure in the loin of the affected side may increase and make more evident the flow of pus from some suppurating kidneys. This pressure must be made while the examiner watches the ureteric orifice. When the suppuration is confined to one kidney the observer can determine a good deal as to the functional capacity of the other kidney as shown by the emission of frequent and forcible jets of clear urine.

Usually one can obtain an exact localization of a suppurative process of the upper urinary tract through the use of the plain diagnostic cystoscope. There are, however, cases in which one wants the additional and more exact knowledge that is only to be obtained by the examination of the separate urines. Ureteral catheterization is by far the most accurate means of securing these. Catheterization by means of the catheterizing cystoscope is the most generally available method and has certain advantages even in women, in that the urethra does not have to be dilated so much as in the atmospheric distention method, nor does the patient have to assume so trying a position as that usually used with atmospheric distention. My only patient who has been catheterized by both methods found the pain and discomfort far less when the catheterizing cystoscope was used.

A word of caution in regard to ureteral catheterization is not out of place. The delicacy of manipulation required and yet the ease with which by means of suitable instruments it may be accomplished in a considerable proportion of cases gives to it a certain fascination sometimes hard to resist. In the cases that I have seen I have not known of any serious ill-effects from its use, but the pushing into a ureter of a catheter which is at best difficult to sterilize is not a thing to be done without some deliberation. In suppurative cases only the suspected ureter should be catheterized, the urine from the well kidney being simultaneously collected by means of an ordinary catheter placed in the bladder. The bladder should be thoroughly washed before this collection is begun. I believe that as we become more proficient in recognizing and interpreting the conditions that the cystoscope shows us we shall find that the necessity for catheterizing the ureter for purely diagnostic purposes will become less frequent.

Incident to the localization of a chronic urinary suppuration much is usually to be learned regarding its probable cause; these points are, however, outside the limits of this paper.

SUMMARY.

The careful localization of chronic urinary suppurations is essential for accurate treatment. The conclusions drawn from the glass-tests, as applied to suppurations of the urethra, are often misleading, while those drawn from the irrigation test are more accurate. Without cystoscopic examination, it is at times almost impossible to differentiate chronic suppurations of the bladder from those of the kidney. Before operating upon a suppurative lesion of the kidney it is essential that one verify his diagnosis as to which kidney is involved, either by seeing turbid urine issuing from the corresponding ureteric orifice or by ureteral catheterization, reliance upon symptoms alone, even when these seem to leave no doubt, may lead to serious error.

THE EFFICACY OF SERUM TREATMENT IN STREPTOCOCCUS PUERPERAL SEPTICEMIA.*

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AT two previous meetings of this society the use of antistreptococcus serum in streptococcus puerperal sepsis received more or less attention; and inasmuch as a committee was appointed to confer with the State Board of Health regarding its manufacture by the Commonwealth, it seems proper to review briefly a few facts concerning the disease, its pathology, its treatment, and their relation to the results of serum therapy. By this means we shall better understand the question of mortality and what we may expect of the serum treatment in the light of past experience and investigation.

It is probable that in any community the approximate number of deaths from puerperal sepsis is never known, as, wittingly or unwittingly, many of them are ascribed to intercurrent affections which are but the results of infection during labor. The hospitals also care for many who in the later stages develop pelvic abscesses, and hence such cases fail to be entered under their true heading. Notwithstanding this, in the city of Chicago, for the forty-eight years prior to 1896, Bacon[1] found it given as the cause of death in 12.75% of women between the ages of twenty and fifty years.

Reynolds,[2] in 1893, treated 28 cases in hospital practice, with 7 deaths; but according to the health reports for the same year, this number represented more than one fourth of all the cases in Boston.

In the mortality reports for the city of Boston for 1893, there were 28 deaths in a population of 487,379; in 1898, 8 among 528,463; in 1903, 23 among 603,163.

The Massachusetts State Reports give 48 deaths in 1893; 27 in 1898; 27 in 1903, from the same cause.

The small diminution of the ratio during this time may be due in a great measure to the increase in foreign population, among whom midwives are extensively employed, as well as to the most frequent cause — criminal abortion. Bumm,[3] in a recent article, says that of all wound infections puerperal fever has been least affected by

* Read before the Obstetrical Society of Boston, April 25, 1905.

antiseptic technics and that although the hospital mortality has decreased, the deliveries in private houses show nearly the same mortality as fifty years ago. He further states that between 4,000 and 5,000 women die yearly in Prussia of puerperal fever. The lack of advance in private he lays not so much to want of understanding on the part of the nurses, as to the fact that they are obliged to do many things which tend to increase the chances of infection; to the impossibility of carrying out surgical cleanliness; to the increased operative interference; to the unfavorable conditions surrounding the poorer classes; to the fact that many women leave the bed too soon. He feels also that we can hardly expect antisepsis, under the present circumstances, to further diminish the death-rate.

While such conditions prevail in Germany, and to a certain extent in our own community, it is quite obvious that we are in urgent need of methods to combat sepsis better than those we now possess.

All statistics prove that the streptococcus, either in pure or mixed cultures, is present in a great proportion of the serious and fatal cases of puerperal sepsis. Krönig,[3] in an examination of 179 cases of puerperal endometritis, divided them into 3 groups: pyogenic, gonorrheal, sapremic. In the first group, 75 out of 79 cases showed the streptococcus pyogenes.

Williams,[4] in 150 cases, found 31 pure and 13 mixed cultures of this organism.

In a series of 27 positive cultures from the uteri of patients who entered the gynecological service at the Boston City Hospital suffering from the effects of sepsis after criminal abortion, miscarriage and full-term labor; 18 gave pure, and 3 mixed infections of streptococci. These figures indicate the large proportion of infections with this micro-organism, either alone or accompanied by others.

The lesions in puerperal sepsis vary exceedingly; from mild infections of vaginal tears to processes which invade the uterus, and passing beyond, give rise to the symptoms of septicemia and pyemia. In puerperal endometritis the infection may be restricted to a part of the uterus or may extend over the whole internal surface. Although it usually remains limited to the endometrium, it often extends farther by way of the lymphatics, or when thrombi at the placental site are infected, they may become the starting point of an extensive phlebitis.

With the streptococcus, the local lesions are comparatively slight. In the virulent cases, on microscopic examination, a thin layer of necrotic tissue lies next the uterine cavity; the zone of cell infiltration is lacking or poorly developed; and the organisms are found scattered through the lymphatics of the uterus. It is this zone of cell proliferation in the milder types which limits the streptococci to the layers next the endometrium.

If the process extends into the uterine wall the stages of metritis are present, varying from areas of cell proliferation to the small abscesses scattered through the wall along the course of the lymphatics.

Salpingitis may occur by direct extension from the mucous membrane of the uterus or through the lymphatics; but it seems to me that the tubes are quite frequently spared and the brunt falls upon the connective tissues of the pelvis. Peritonitis is often the cause of death and may arise from the spread of organisms by the lymph channels to the peritoneum, leakage from the Fallopian tubes, or the rupture of a pelvic abscess. Pyemia is the result of venous thrombosis and the dissemination of small thrombi throughout the body. All these pathological changes proceed with great rapidity owing to the facility with which the streptococcus spreads.

The labors of various investigators have shown that in the greater number of those who die of puerperal sepsis streptococci are to be found in the blood and internal organs. Others in the past have seemingly proved their presence in the vagina during pregnancy and also in the uterus and vagina, post partum, of women who subsequently completed a normal convalescence. Dr. Newell tells me that in a series of cultures from the uteri of recently delivered women streptococci were found in many. Others have reported the same. Most of these women recovered without symptoms. However, Williams, Krönig and Menge,[5] and others have demonstrated that pathological organisms are not usually present in the vagina and are probably introduced from the external genitals. Judging from these results, we are apparently dealing either with an organism of varying virulence or different varieties of the same organism, and we know that infections with organisms from the same source may produce entirely different results in different individuals. Finally, reasoning from our general knowledge of all infectious processes, we may say that the results of any form of treatment depend largely upon the general health and susceptibility of the individual, the condition of the tissues exposed to infection, the virulence of the organism, as well as the headway acquired before treatment is begun. All these must be taken into account when an attempt is made to estimate the worth of any special line of therapeutics.

The present treatment of streptococcus infection is purely local and aims to minimize the dose and thus enable the tissues to care for what remains.

Now to properly estimate the value of antistreptococcus sera as adjuvants to our present method, it is necessary to consider for a moment the results of treatment without its aid.

Krönig and Williams[4] treated without serum 56 and 52 cases, respectively, of streptococcus endometritis with a mortality of less than 4%. In Williams series of 30 pure infections, all recovered; but of 12 where the streptococcus was mixed with other organisms, 2 died.

Of a series of 40 pure streptococcus infections which entered the Boston City Hospital after full-term labor, criminal abortion, or accidental miscarriage, 6 died. Of 5 cases showing strep-

tococcus with other organisms, all survived. As many of our patients enter moribund, our own mortality must of necessity be larger than when they are seen in the early stages in the lying-in hospitals.

Bumm [3] states that under any form of treatment about 80% recover.

All authorities agree that infections with the streptococcus alone are less deadly than when some other micro-organism is present as well, although the small number of our own does not seem to bear out this statement.

The sera manufactured to combat infectious processes are divided into two classes: antitoxic and bacteriacidal. The first neutralizes the toxines; the second inhibits the growth of bacteria. The sera for the treatment of diphtheria and streptococcus infections are illustrative of the types, and a brief consideration of the two makes clear the reasons for the efficiency of one and the comparative inefficiency of the other.

Antidiphtheritic serum, being antitoxic in character, acts on the toxines alone, but has no effect upon the organisms, which may be made to grow on diphtherial antitoxin.

Antistreptococcus serum is antibacterial; impeding the growth of the organism, but generally considered to possess little antitoxic power. Virulent substances have been isolated, which, when injected into animals, produce toxemia, and there is also a ferment of the nature of a diastase. Unlike the toxines of diphtheria, they are not readily obtained in such a form as to be of practical benefit. There are two more important contrasts. Diphtherial infection is usually local; while streptococcus infections are very often general. In the former there is one, in the latter many species or strains of the same organism.

The production of an antistreptococcus serum of utility to the practitioner of medicine is attended with many difficulties.

Professor Tavel [4] of Bern, says that streptococcus serum therapy is grounded upon the knowledge of the pathogenicity of the streptococcus, and that the efficiency of an antistreptococcus serum depends upon the consideration of two chief factors in its preparation: the virulence of the strain of organisms used in immunization and the multiplicity of the varieties of streptococci.

Behring,[5] who experimented upon mice, found no relation between the virulence of streptococci for these and various other animals; but on the other hand, Marbaux [6] came to the conclusion that the more virulent for man, the more virulent for the lower animal. However, Marbaux's conclusions do not seem to be verified by the work of others. Petruschky [6] proved that streptococci, which were very virulent for canaries, had no effect upon man; and the experiments of Tavel bear out his observations. From these results it is evident that the organisms undergo changes in the passage through the living body; in some cases becoming more, in others, less virulent, so that an injection with the most virulent strains from man may produce no reaction in the animal selected for immunization and *vice versa*.

Van der Velde [7] added further difficulties to the question when he demonstrated that the serum of an animal, immunized with a certain strain of streptococci, protected only against infection with that particular strain and had little or no influence upon others. He also showed that it was possible to inoculate with two varieties and obtain a serum potent against both: *i. e.*, a polyvalent serum.

Professor Tavel [4] suggested, that in immunization of animals for the production of serum, only streptococcus strains should be used which were obtained from severe infections in man and had undergone no change in virulence during the processes of preparation. Finally, an antibacterial serum rapidly undergoes degeneration and hence must be freshly made.

These are a few of the difficulties which underlie the preparation of an efficient serum.

Broadly speaking, then, the principal reason for the dissimilarity of results in the two diseases is that in one we are dealing with a single organism and a local process, requiring only an antitoxine; while in the other, we are contending with many strains of the same organism and a general process, requiring a polyvalent antibacterial and antitoxic serum. As yet we have nothing fulfilling these requirements, for all sera, so far, are only moderately polyvalent and antibacterial; possessing little or no antitoxine. Hence, even if our serum kills the particular strain of organisms in the case under treatment, it has no effect upon the toxines already liberated in the body, and it is only when the individual is able to eliminate or destroy these that recovery can follow.

Mixed infections are of course not considered in the above, but constitute another drawback.

We now come to the consideration of the reported results of the serum treatment, which in practically all cases has been used in conjunction with the simple methods of cleansing the uterine cavity. Antisepsis, and asepsis in turn, have so lessened the frequency of the severe forms that the general practitioner sees few of them, and it is only in the wards of some large institution that they can be studied in sufficient numbers, and in such a manner, as to enable us to determine the value of any special treatment. Isolated cases or groups of two or three recoveries after the administration of serum are reported in the medical journals; but unfortunately many of them have no bacteriological examination, upon which a part of the therapeutic claims of serum must necessarily be based. While the course of the disease may have seemed to be favorably influenced by the injection of the serum, the fact must not be lost sight of, that many would have recovered without its aid. On the other hand, the majority of the patients on whom it has been tried have been in desperate condition — too far gone to be saved by any means. Granting even that these isolated cures are due to the serum, we can rely only on the statistics of larger series of cases

which are carefully studied clinically; and upon results, interpreted by those, who, from a wider experience, are better fitted to pass judgment.

Marmorek,[8] who first made trials of antistreptococcus serum in man, considered his serum a specific for all pure infections of this nature. In his series of 16 cases of puerperal fever: 7 pure infections recovered, 3 died where the colon bacillus was also present; and of 5 with the streptococcus and the staphylococcus albus or aureus, 2 died; as well as one pure infection with the colon bacillus. The reports of his success were first published in 1895.

Bar and Tissier[9] (1896) saw no result in a series of 12; and Wallick[10] (1897) was able to prove neither diminution of disease when the serum was used as a prophylactic nor lessening of severity when employed in actual sepsis.

Savor,[11] in 1897, reported 16 cases: no result in 6; an apparently favorable effect upon the temperature in 6; questionable in 5.

Queirel,[12] in 1898, reported 2 deaths in 17, for the most part severe cases, but was unable to decide whether the recoveries were due to the serum.

In 1898 [13] a committee of the American Gynecological Association considered the value of this treatment in a series of 101 cases of streptococcus infection and also in a series of 251 in which no bacteriological examination was made. They reported a mortality of 32.69% among the first, 15.85% among the second series, and concluded that the profession was not justified in proceeding further in experimentation with the serum.

Packard and Willson,[14] in their review of serum therapy published in December, 1902, stated that out of 117 patients treated during the previous two years, 114 showed marked signs of improvement. Their list included some cases of puerperal sepsis but did not state whether bacteriological examinations were made.

Tavel,[6] in 1902, reported the results of the use of his serum in 30 cases: 5 mild, begining infections, with injection during the first twenty-four to forty-eight hours, and no deaths; 5 of medium severity, with exudate and high fever, received the serum during the first three to five days, with no deaths; 20 severe infections were treated with varying results; and of 4 cases of pyemia, 2 recovered.

Peham,[15] in 1904, treated with Paltauf's serum and local measures 33 cases in which the bacteriological diagnosis was certain: 19 pure streptococcus infections, with one death: 14 streptococcus with other organisms, and 6 deaths. One case of pyemia is especially striking; in which, although the organisms were found in the metastatic abscesses after injection of the serum, the temperature fell to normal. Blood cultures from others showed streptococci with recovery on treatment.

Bumm,[3] in October, 1904, detailed his experiences with the serum treatment for the preceding ten years. He used at various times: Marmorek's, Merk's, Tavel's and Menzer's sera, but principally that of Aronson. In 21 cases, with a favorable prognosis from the start, all recovered. Of 32 severe infections, 12 with streptococci demonstrated in the blood and all appearing to be suffering from septicemia or pyemia, 6 died. Upon these women treatment was begun during the first week and shortly after the beginning of the infection, when apparently only an endometritis was present. Of the 32 with severe infections, 12 out of 17 examinations showed streptococci in the blood and in some of the severe cases, both his consultants, assistants, and himself felt that recovery was due to the influence of the serum. It was also proved in 4 instances, when for a number of days there had been no phagocytosis, that twelve hours after injection of serum it suddenly appeared. He looks upon this as a proof of the efficacy of the serum in endometritis, where the natural processes are unable, or unable at once, to overcome the micro-organisms. He also says that tardy employment of serum in severe cases will give no result in from 60% to 70%; but when used early and in mild sepsis as well, 80% to 90% of successes will follow. He recommends the classification of cases according to the anatomical distribution which the infection has taken on at the beginning of treatment, and, considering a series from this standpoint, he finds:

(1) Five with septic peritonitis — 5 deaths.

(2) Three with pure septicemia (organisms in blood, but no localization) — 1 death.

(3) Two with septicemia and endocarditis — 2 deaths.

(4) Four with pure pyemia from septic phlebitis — 4 deaths.

The above shows the slight effect of serum upon processes localized outside the pelvic organs; but at the same time, organisms circulating in the blood stream may be overcome by the individual either alone or aided by the injection of serum.

The dosage has constantly increased in amount. Marmorek [8] gave 20 cc., following it by 10cc. after twenty-four hours, according to the patient's condition. Tavel [6] gives 100 cc. to 200 cc. in twenty-four to forty-eight hours; Peham [15] 100 cc. at one time. Bumm [3] recommends 50 cc. or more, injected every two to three days. The serum as a rule is considered harmless and except for a skin rash and an occasional disturbance after intravenous injection, no untoward results are reported which cannot be ascribed to accident and personal idiosyncrasy.

The main point is to use it early, in large doses, and repeat if necessary. There is one more recommendation by Foulerton which seems wise, and this is: that if no improvement takes place after one or two doses of a certain serum, to try another make.

Mitchell Bruce [16] reports success in one such case of cardiac infection, and I can see no reason why it should not apply equally to the subject under discussion.

The article by Bumm,[3] to which frequent reference has been made, seems to me the most judicial and judicious discussion of the subject which I

have seen and perhaps in closing I can do no better than to state his conclusions:

That there exists to-day no serum which exerts any clinically proven influence upon the pathological processes in the tissues, which are the result of the spread of the streptococcus from its original point of entrance; that the employment of antistreptococcus serum when a general peritonitis of puerperal origin, a pyemia, a parametritic phlegmon, etc. exist, is ineffectual and useless. He believes that undoubtedly, whenever this organism has not extended beyond the endometrium or is circulating in small numbers in the blood stream, without metastatic lesions, the serum aids in overcoming the infection; that after severe operations and foul uterine discharges its prophylactic use is to be recommended; that large doses are necessary, repeated every two or three days; that the earlier it is injected the better the results. This is a fair and impartial statement of what we may expect to-day from the serum treatment of streptococcus puerperal sepsis.

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WHAT THE SUBURBAN SURGEON IS DOING IN THE ABDOMEN, AND HOW HE DOES IT.*

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In presenting this series of abdominal sections for your consideration it is not my purpose to attempt a recital of unique experiences or new methods, but to give an account of the manner in which I have dealt with the various conditions herein recorded, as they have occurred in suburban practice, together with a statement of the results obtained.

Suburban hospitals have multiplied with great rapidity in recent years, and, in consequence, much major operating is being done by local men, whose methods and whose results, aside from the occasional report of a case of perhaps more than ordinary interest, are to a great extent unknown. This is not as it should be, for there are many problems relating to this class of surgery which could be much more easily disposed of if all the facts were available. With this idea in mind, I shall offer a report of my personal experience, in the hope that it may contribute in some measure to a knowledge of what the suburban surgeon is doing in the abdomen, and how he does it.

I have divided the list into groups, as follows: I. Appendicitis; II. Pelvic Conditions; III. Disease of the Gall Bladder and Bile Ducts; IV. Hernia; V. Miscellaneous Conditions not easily Classified.

GROUP I. — APPENDICITIS.

Appendicitis: 125 cases, 97 acute and 28 in the interval. Of the acute cases 14 died, a mortality of 14.3%; in the interval cases there were no deaths. A somewhat critical study of the cause of death in the fatal cases will serve to explain this high death-rate.

In seven cases general peritonitis was present at the time of operation. These cases had either not been recognized as appendicitis or operation had been refused, or delayed, until the patient's condition became desperate. In the face of such odds, one is always tempted to do nothing, for if the patient dies, as he usually does, the surgeon gets no credit, and may get much blame. On the other hand, we know that after a rapid removal of the focus of infection a certain small percentage of these cases recovers. It is clearly our duty, then, it seems to me, to advise operation, in disregard of all other considerations, for it offers the patient his only chance.

When the general practitioner becomes convinced that appendicitis is a surgical disease, and that early operation gives the best results, the surgeon will rarely be confronted with this condition. Many practitioners, however, especially among the older men, are still extremely conservative, and one often hears in the district societies and in private conversation rather forcible language against what is called too much operating in appendicitis, from men of local consequence and large clientele. The demonstration of morbid conditions *in vivo* does not always impress them, and I fear that the teaching of Ochsner, while perhaps of advantage in certain cases and under certain conditions, will have an influence to delay progress in this direction.

Two of the earlier cases died of late sepsis, the result of post-cecal collections of pus. I should not, at the present time, expect a fatality from this cause alone. One patient, a little girl of three years, died in convulsions eighteen hours after operation, in what appeared at the time to be a favorable case.

One death occurred from hemorrhage, the result of gangrenous involvement of the iliac vein. A little girl of ten, a patient of Dr. Peirce of West Newbury, was operated upon the fifth day of the attack. The appendix was found behind the cecum, markedly gangrenous. Everything went well for a week, when the attending physician, upon removing the gauze drain, observed a considerable gush of venous blood from the wound. It was so profuse that firm packing was necessary to control it. I saw the child soon afterward, and made a hasty exploration, but not being able to definitely locate the source of the trouble, I repacked the wound with gauze. The hemor-

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rhage, however, continued, and the patient died in about thirty-six hours. J. Ryerson Fowler reports a similar case in his monograph.

Three patients died of peritonitis on the fourth, sixth and seventh day, respectively. In dealing with such cases, I think one should always consider the advisability of enterostomy, as suggested by Greenough, although Richardson states distinctly that he has never seen any benefit come from it.

One patient, a lad of nine, whose abdominal condition was entirely satisfactory, died of acute pneumonia on the fifth day.

Aside from complications already cited, there were two cases of post-operative obstruction, requiring a second operation, — one early, upon the eighth day, and one late, after four months. In the first case a parietal adhesion had caused sharp angulation of the intestine at the point of attachment, resulting in complete occlusion; in the other a narrow band was found in the right iliac fossa, completely encircling the ileum; both recovered.

Three patients were operated upon during pregnancy: Two in acute attacks, one at seven months, the other at three months, and one in the interval at three months; all recovered. In the first case the patient was prematurely delivered on the eighth day; in the other two pregnancy was not interrupted. In one case right tubo-ovarian abscess and fibro-myoma of the uterus were found as complications. This patient recovered after removal of the abscess and appendix, and six months later also recovered from hysterectomy for removal of the fibroid.

Excluding the six cases of general peritonitis, all of which were *in extremis* and almost certain to die under any treatment, the mortality was 8.2%. I mention the two sets of figures for the purpose of emphasizing by comparison what seems to me to be the importance of early operation; and this naturally leads to a brief consideration of that question, the only one, in fact, aside from technique, to which I shall give any attention.

In 1902, Meyer and Elsberg published papers on "What Can be Diagnosticated in Appendicitis," and while it seemed reasonably certain that the position of the appendix could often be determined, they concluded that nothing definite as to the pathological condition could be predicated from signs and symptoms. My own experience has impressed me with the absolute soundness of this doctrine.

For example, I have found a completely gangrenous appendix in a case where the pulse and temperature were normal and where no rigidity and only slight tenderness were present; I have found the inflammatory process limited to the mucous membrane, with only slight injection of the peritoneum of the appendix, in a case where a history of sudden severe and continuous pain, marked tenderness and rigidity, with a pulse of 130 and a temperature of 104°, would clearly suggest something worse. And so one might go on with an almost endless recital of similar experiences.

Furthermore, if my observations are correct, there is no way by which the probable course of the disease may be predicted in a given case. It is true that many attacks of appendicitis subside, even when the severity of the symptoms would not warrant the probability of such a result. On the other hand, it is not too much to say that every surgeon sees cases which appear mild for a day or two, then suddenly grow worse, and demand operation and very likely drainage, a thing to be avoided if possible, both on account of present as well as future disadvantage.

In deciding this question, then, one is confronted with certain facts: first, the entire uncertainty of the nature of the process present; second, no reliable information as to the course which the disease is likely to pursue; third, the knowledge that in waiting one takes the chance of being too late or of subjecting his patient to drainage. This, it seems to me, is a fair and plain statement of the question. If we accept the premises, the conclusion is inevitable.

Technic. — In preparing a patient for operation in acute cases an enema is first given. The field is shaved, scrubbed in soap and water for five minutes, using sponges instead of a brush, and then washed with 70% alcohol. Especial attention is given to the umbilicus, which is finally painted with tincture of iodine. The operator's hands are thoroughly scrubbed with soap and water for five minutes, using a stiff brush; they are then immersed in 70% alcohol for two minutes. Gloves are always worn. I have varied the method in some cases by washing the field in solution of chlorinated soda 1-10 before the alcohol is applied. I have also occasionally used solution of biniodide of mercury, 1-500 in alcohol, as suggested by Treves. The instruments, including needles, are boiled for ten minutes. Scalpels, after being thoroughly washed, are immersed in either 5% solution of carbolic acid or 70% alcohol, preferably the latter.

My incision is vertical through the outer border of the right rectus, beginning about two inches below the level of the umbilicus. This, as Routier says, always leads to the cecum, and is less likely to be followed by hernia if drainage is used. It also has the advantage of being easily enlarged if pelvic complications require interference. It is sometimes bloody if the deep epigastric vessels are encountered, but this is of small moment.

Immediately upon opening the peritoneum it is my practice to dispose of gauze strips in such a manner as to fully protect the general cavity, before attempting to locate or remove the appendix. If turbid serum or pus is present, it is carefully wiped away with sponges.

I usually remove the appendix by the so-called German method, which consists in clamping the free border of its mesentery at two points and cutting between them with scissors. A few more snips through the base of this mesentery, close to

the appendix, brings one to the cecal junction. While making these cuts with scissors it is necessary for the assistant to catch two or three bleeding points on the mesentery and one or two on the appendix. Those on the mesenteric stump are tied at once with plain catgut, but the clamps are left on the appendix without tying. A No. 2 or 3 chromic gut ligature is tied around the appendix close to the cecum.

The appendix is now ablated with scissors or the cautery. If scissors are used, they are discarded from the kit, and the stump is touched with pure carbolic and absolute alcohol. The artery forceps used for this purpose are also discarded. It is often much easier to remove the appendix base first in cases where the tip is firmly adherent, or where its location is not at once evident, on account of twists or angulations.

The question of whether or not drainage should be used in certain acute cases is often difficult to decide. Where only turbid serum is present, or where there is but little pus, I have of late been in the habit of closing the abdomen, after carefully wiping away the serum or pus with gauze sponges. Such cases cause a certain amount of anxiety for a day or two, but I believe to a considerable extent in the teaching of Morris, that we may place great confidence in the absorptive and phagocytic power of the peritoneum after the source of infection is out of the way.

In drainage cases I invariably use the cigarette, placing a small wick down to the stump, or behind the cecum, and sometimes one into the pelvis. The abdomen is generally closed down to the drains with mass silkworm-gut suture. Recently I have been making a much shorter incision than formerly, and closing it with tier sutures, leaving but a small opening for the wick. This procedure seems worth while, for by protecting the lower end of the suture line with rubber tissue one often gets first intention, and with it the advantages of a wound closed in layers, minus a small cicatrix at the lower end. If the wound breaks down and heals throughout by granulation the shorter it is the better.

In chronic cases I employ the incision of Lennander at the outer border of the right rectus, with retraction of the muscle inwards. The patient is placed in moderate Trendelenberg position and the abdominal wall is lifted away from the intestines with retractors. This maneuvre enables one to see the cecum, and where there are no adhesions, the caput coli and appendix can be easily lifted out of the abdomen, with practically no evisceration and very little handling. The appendix is removed as I have already described.

I have found the method suggested by Kelly to be of the greatest service where the appendix is surrounded by a dense mass of exudate. The base is first detached; a circular incision is then made through the peritoneal and longitudinal muscular coats. The remaining portion of the appendix is seized with forceps and stripped out of its bed without difficulty and with no hemorrhage.

It has not been my custom to bury the stump by purse string or other procedure, although I realize that most surgeons consider it good practice. Recently, however, Lilienthal and Seelig have shown quite conclusively, it seems to me, that this procedure is not only unnecessary, but may be really dangerous.

In closing I use the layer suture, consisting of continuous plain catgut in the peritoneum and posterior sheath of the rectus, two or three interrupted plain catgut sutures under light tension in the muscle, chromic gut or kangaroo tendon mattress sutures in the fascia, two or three silkworm gut tension sutures with a double loop in the fat, and a continuous lock-stitch horsehair to approximate the skin.

Post-Operative Treatment. — Nothing is given by mouth for six hours, but if thirst is great enemata of salt solution are used. At the end of this time the patient is allowed frequent sips of hot water, and, if well borne, for two or three hours small amounts of milk and lime-water, or milk and Vichy are given, and gradually increased. Morphine is generally forbidden and very rarely found necessary. Pain after operation is usually dependent upon the degree of distention present, and for the relief of this condition I have found injections of milk of asafetida to be of great service. If it is necessary to do anything further for pain, I use 15 to 20 grs. of aspirin by rectum. I consider it desirable to have the bowels move as soon as possible after operation, especially in pus cases, and for this purpose I use fractional doses of calomel up to 1 or 2 grs. to be followed in two hours after the last dose by a high compound enema of Epsom salts, turpentine and oil, or glycerin.

GROUP II. — PELVIS.

There were 89 operations upon the pelvic organs for various conditions, including 25 cases of pyosalpinx; 31 cases in which section was done for ovarian disease or displacement, and prolapsus or retroversion of the uterus, with or without adhesions; 14 cases of uterine fibroids, 9 of which were treated by hysterectomy and 5 by myomectomy; 10 cases of ovarian cysts, 4 of which were dermoids; 2 cases of contracted pelvis and 1 case of placenta previa, in which Cesarean section was done; 5 cases of extra-uterine pregnancy with intraperitoneal rupture; 1 case of cancer of the cervix, treated by total hysterectomy.

In this series there were 5 deaths: 3 following operations for pyosalpinx, 1 in a case of large serous cyst of the ovary with papillomatous degeneration and ascites, in a feeble patient, and 1 from mechanical obstruction by a band, following hysterectomy. In the last case death could have been prevented, in all probability, by a second operation, for the autopsy showed a band across the descending colon, easily accessible. The site of the operation was clean.

Of the 25 cases of pyosalpinx, 15 were single and 10 double. There were 3 cases in which rupture had occurred into the general peritoneal

cavity, with 1 death. In the other two fatal cases there were large collections of pus in both tubes; the walls were greatly thickened and the whole mass so densely adherent that lines of cleavage could not be developed and enucleation was impossible. Both were septic; one died from shock a few hours after operation, the other lived a week and died from sepsis. There were no post-operative complications of note, except in one case, where a second laparotomy was necessary to relieve obstruction caused by a parietal adhesion, and three cases of left-sided femoral phlebitis, following hysterectomy for fibroid, ovariotomy and operation for bilateral non-suppurative tubo-ovarian inflammation with extensive adhesions, respectively.

The appendix was removed whenever found diseased on gross appearance or adherent, and, as a rule, the uterus was suspended. Drainage was used in all but two of these cases.

In one of the non-suppurative cases operated on for ovarian and uterine displacement a dermoid the size of an English walnut was found connected with each tube near the fimbriated extremity. Of four cases of dermoid cyst of the ovaries one proved to have a twisted pedicle, and the diagnosis of appendicitis which was made before the patient entered the hospital seemed fully warranted. One nullipara, twenty-four years old, suffered from marked uterine prolapse, and was treated by ventro fixation. In the fibroid cases there was nothing of interest, except that one patient developed mental confusion, with ideas of persecution, on the third day after hysterectomy. She had worried a great deal for a year about her condition, and at the time of operation was much depressed. She recovered completely in a week, the post-operative course of the case otherwise being perfectly normal. The extra-uterine cases were all typical.

Technic. — In operating for pus tube, the patient, after being curetted, is placed in moderate Trendelenberg position, and the abdomen opened in the median line. The intestines are pushed back out of the pelvis and carefully protected by gauze packing. If the omentum is adherent, which is often the case, it is gently separated with the fingers or cut between two ligatures.

The key to the operation for pyosalpinx is the line of cleavage between the tumor and surrounding structures; and having found this, it is my custom to shell out the mass, using the ends of two or three fingers for this purpose. One should be especially careful when separating the sac from the rectum. If rupture occurs during the manipulation the pus is quickly taken up with sweeps. After all adhesions are separated the upper edge of the broad ligament, including the ovarian artery, is tied on either side of the tumor with kangaroo tendon. The tumor is now ablated by a wedge-shaped cut through the broad ligament, the edges of which are sewed together with a continuous lock stitch of chromic gut. The uterus is usually suspended with two kangaroo tendon sutures through the anterior wall. A cigarette drain, which in my practice has grown much smaller of late, unless there is considerable oozing, is placed in the pelvis, and the abdomen partly closed in layers.

In pelvic conditions characterized by prolapsed and tender ovaries, and posterior displacements, with or without adhesions, not accompanied by other demonstrable lesion, I have learned by experience that one should be very cautious about deciding to operate, and when the decision is made, one should be still more cautious about what is done and how much is promised, for it must not be forgotten that many neurasthenic women have pelvic symptoms, such as painful and tender ovaries, painful menstruation, sacral ache and perhaps retroversion, who will not be benefited by a surgical operation, even though it be most conservative. If, after careful consideration, one is satisfied that the pelvic condition is primarily the cause of the trouble, or is contributory in large measure to its continuance, he should operate.

If the ovary is prolapsed into Douglas' pouch and fixed there by adhesions, it is freed, and after being resected, if distinctly cystic, it is sutured to the side of the uterus just below the tubal junction with the chromic gut. In resecting, a wedge-shaped piece is removed with the knife and the line of section closed with plain catgut. Before concluding, however, that an ovary is cystic, one should make sure, as Craig suggests, that he is not dealing with normal Graafian follicles nearing the time of rupture. The uterus is likewise freed, if adherent, and suspended by two kangaroo tendon sutures through the anterior wall and through the edges of the peritoneum.

Sufficient evidence has now been accumulated to establish the value of Kelly's operation in the treatment of retro-positions, but that it sometimes fails of its purpose mechanically there can be no question. As an illustration of this fact, I will cite the case of a patient upon whom I did suspension in 1901, and unwisely closed the small incision with a mass suture of silkworm gut. She presented herself three years later with a ventral hernia, for which I did a second operation. Upon opening the abdomen, the uterus was found in marked retro-position, my peritoneal ligament being stretched out into a mere string of tissue.

Prolapsus in women past the menopause is treated by ventro fixation with two silk sutures which are placed in the anterior wall of the uterus and include the fascial layer of the abdominal wall above which they are tied. It is usually necessary to supplement this with plastic work on the anterior vaginal wall and perineum.

In supravaginal hysterectomy for fibroids, the broad ligaments, including the ovaries if diseased, are tied with kangaroo tendon on the pelvic side and clamped on the uterine side nearly to the level of the uterine arteries. A transverse incision is then made across the front of the uterus, just above the attachment of the bladder, and the peritoneum dissected back for perhaps an inch. A corresponding incision is made poste-

riorly and the peritoneum dissected back in the same way. The uterine arteries are then tied with a ligature, carried beneath them by the Cleveland needle, bearing in mind while doing this the close proximity of the ureters. The uterus is ablated with scissors in an antero-posterior wedge-shaped section. The cervical canal is cauterized with pure carbolic acid or the actual cautery, and closed with chromic gut. The peritoneal surfaces of the broad ligaments and over the stump are brought together with a continuous lock stitch of chromic gut or small kangaroo tendon. There were five myomectomies in this list in cases where the tumors were single and pedunculated. A wedge-shaped section was removed from the uterine wall to include the proximal extremity of the pedicle; the wound was closed with chromic gut.

Ruptured extra-uterine pregnancy, if not promptly recognized, is one of the greatest catastrophies that can befall a woman, and I have repeatedly warned my confrères to be on the lookout for this condition. The abdomen should be opened as quickly as possible, and after clearing the field of blood clot the free border of the broad ligament is clamped on either side of the ruptured sac to control the hemorrhage. A partial salpingectomy is then done in the ordinary way. I make no effort to remove the extravasation: it takes too much time. It is quite necessary to have help enough on hand to infuse when the operation is begun, and equally necessary to use all possible means to combat post-operative shock. In two of the five cases in this series, all of which recovered, I am satisfied that intravenous infusion turned the scale.

Among three Cesarean sections I will only speak of one, a case of placenta previa. As to whether or not the operation is ever indicated in this condition there is a considerable difference of opinion, and I shall not discuss it, except to say that in this case, after careful consideration (Drs. Croston, I. J. Clarke and O'Donnell being in consultation), it seemed to offer by far the best chance for the child, and not greatly increased danger to the mother.

Mrs. G., aged thirty, primipara eight months pregnant, a patient of Dr. Croston of Haverhill, was taken suddenly at 5.30 A.M., with a considerable uterine hemmorhage, which shortly ceased; there were no labor pains. Placenta previa centralis was recognized, the os was rigid and there was no dilation. At 9 P.M. she had another sharp hemorrhage, with no change in other conditions, and it was decided to operate. The patient was taken to the Hale Hospital. The abdomen was opened in the median line from just above the pubes to the umbilicus. The uterus was delivered and gauze packing introduced all about it, and while the assistant tightly grasped the lower segment an ample incision was made in the anterior wall. The child was quickly delivered, the cord being cut at once between two clamps. The placenta was attached to the lower segment of the uterus, completely covering the internal os. It was detached without difficulty and with no great amount of hemorrhage. At this point the patient was given a dram of fluid extract ergot under the skin. Towels wet in hot salt solution were applied to the uterus, which promptly contracted. The uterine incision was then closed with three layers of chromic gut, the deepest layer not penetrating the mucous membrane. The abdomen was closed with mass silkworm-gut suture, with chromic gut in the fascia.

The other two Cesarean sections were done in cases of pelvic deformity, the result of congenital dislocation of the hip. Both mother and child recovered in all three cases.

(*To be continued*)

Medical Progress.

REPORT ON OBSTETRICS.

BY FRANK A. HIGGINS, M.D., BOSTON.

(Concluded from No. 7, p. 199.)

PHYSIOLOGICAL EXPERIMENTS ON THE ISOLATED PREGNANT UTERUS.

Kurdinowski[9] reports his experiments on rabbits on the "revival" of the excised uterus. Under ether the abdominal aorta is ligated and cut, and Locke's saline solution, under moderate pressure, is forced through the vessels washing out all the blood. The uterus is then excised with the adnexa, the broad and round ligaments, the intercellular tissues, a piece of the aorta and of the vena cava, and is put into the moist chamber of an apparatus especially constructed for this purpose. Here the uterus is nourished by Locke's fluid, and the uterine contractions occur under favorable conditions without any external stimulus, after it becomes "restored," and they are recorded by a kymograph. The contractions of the uterus and those of the vagina are not, as a rule, simultaneous; they do not depend on each other and they recur at tolerably regular intervals. After an hour or more the uterus gets fatigued, the waves of the curve become gradually less, the intervals between them become longer, but after a short period of rest the uterus begins again to work — a certain regularity is thus observed in the work. Peristaltic contractions are best observed in the horns of the uterus, and are like movements of the intestines, and usually start from the abdominal end of the uterine horn. The other parts of the uterus, the ligaments and the Fallopian tubes also show peristaltic contractions. The duration of life of the isolated uterus varied from twenty-four to forty-eight hours under favorable conditions. The gravid uterus was generally found to be more sensitive and the contractions more vigorous than the non-gravid one, but the contractions occur in the virgin uterus as well as in the multiparous. His conclusions are that the isolated uterus towards the end of pregnancy is undoubtedly capable of performing an act of parturition, and in two cases he observed the birth mechanism of the isolated uterus in all its details. Also it would seem, that at least as regards its contractile action, the uterus is to some extent independent of influences proceeding from the central nervous system.

Pharmacologic experiments on the isolated uterus show that ergot and hydrastis act directly

[9] Dublin Med. Jour., December, 1904.

upon the uterus itself, that is, upon its intrinsic nerve and muscle apparatus, causing contractions which are quite independent of constriction of the blood vessels. Adrenalin, even in the most dilute solutions acts more energetically upon the uterus, whether the uterus is intact or isolated, than those remedies which are regarded as specific for that organ. It evokes a violent reaction, greatly strengthening contractions and imparting to them a very pronounced tetanic character. It also energetically constricts the blood vessels of the isolated uterus.

MODIFICATION OF THE PORRO OPERATION.

Wagner [9] modifies the Porro Cesarean operation so that, as he says, there is only one operation done on the mother, that of amputation of the intact pregnant uterus with everything left *in situ* as far as the contents of the uterus is concerned. In the original Porro operation the fetus is first delivered by Cesarean section, making the first operation, and then the uterus is amputated, the second operation, both being performed in the abdominal wound of the mother. In Wagner's modification the delivery of the child from the uterus is an act of its own, done at another table by other hands, and thus not intefering with the operation done on the mother nor consuming extra time on the patient under anesthesia. Instead of placing a rubber tube constrictor around the supracervical segment of the uterus, and tying the uterine arteries before the amputation takes place, the cervical segment is grasped from behind with the left hand and firmly compressed, the segment itself being elongated and made thinner through lifting up and traction of the uterus by an assistant. In this manner the cervical segment is constricted and hemorrhage is controlled absolutely. The slipping of the stump out of the grasp of the hand is guarded against by four forceps inserted into the wall of the uterus at four different diagonal and rectangular points above the constricting pad. The technic of the amputation is as follows: (1) An opening is made in a transverse direction right above one of the forceps. (2) Two fingers of the assistant are introduced into this opening from above downward and inward, the palmar aspect of the hand being in contact with the uterus in such a way as to enable the assistant to hold backward and upward the contents of the uterus, in order to prevent them from prolapsing or from being injured during the following steps of the operation. (3) The amputation is completed with quick, heavy strokes of the curved scissors held at such an angle as to form a conical shape of the stump. (4) The absolutely dry stump, still in the firm grasp of the hand, is rapidly sewed up, the first running sutures comprising the uterine arteries, the lumen of which can be seen very readily. By not ligating these arteries any sooner, the circulation and nutrition of the child are maintained as long as possible. (5) The uterus, which is quickly removed, is delivered by others. The time consumed from the moment the circulation is interrupted until the delivery amounts to something over two minutes. This, he says, is considerably less than in the original Porro. He has done this operation three times in the last year and the fetus was delivered alive in the two cases in which it was alive before the operation. His cases are reported, also a successful one by Dr. J. Clarence Webster. From the writer's description it would appear that this modification would save time to the mother, and would also tend to remove the dangers of infection involved to the mother by the manipulations of the Cesarean section and the delivery of the child as performed at the abdominal wound.

[9] Illinois Med. Jour., January, 1905.

APPENDICITIS AND THE PUERPERIUM.

An editorial, under this title in the *Journal of the American Medical Association* [10] says as in most things in medicine it seems not unlikely that the pendulum of opinion has swung too far with respect to the definite conclusion that the source of infectious material of puerperal infections is always from without and due to the carelessness of the physician, nurse or midwife or the patient herself, and that there is about to be differentiated a series of cases in which the origin of the infectious material will be found within the patient's tissues.

One thing is very clear: micro-organisms of various kinds, under certain circumstances, may become so walled off as to be rendered innocuous and yet retain their vitality within the tissues for many years. This has been demonstrated with absolute certainty in such diseases as tuberculosis and typhoid fever. In the same way, it seems not unlikely that certain intra-abdominal conditions, after being for the moment acute, may become so walled off as to be a source of no further immediate danger and yet the micro-organisms present may retain their vitality. Acute oöphoritis, for example, may cause a protective reaction sufficient effectually to occlude the infected part from surrounding tissues, and, in the same way, an appendicitis that has gone beyond the catarrhal stage may lead to the formation of adhesions that effectually protect the peritoneum.

In both cases, however, virulent micro-organisms remain, and it is easy to understand that, during the serious intra-abdominal disturbance consequent on the enlargement of the uterus during the puerperium and then its rapid evacuation and firm contraction immediately after labor, the adhesions formed may be so disturbed as to permit the escape of such micro-organisms into the tissues. In not a few cases of puerperal fever it is noted that there are no signs of infection in the vagina itself or in the uterus. Instead, then, of considering that the infection in such cases must necessarily be from the exterior, it seems much more justifiable to trace it to some internal source. Under such circumstances, a careful history of the patient may disclose the occurrence of attacks of appendicitis or of oöphoritis that would give a clue to the origin of the

[10] Jour. Am. Med. Assoc., April 15, 1905.

infectious material that is now producing the septic process.

Such considerations are valuable not only as helping to solve an important problem in etiology, but also because of the indications which they furnish for treatment in cases that are otherwise so hopeless. When there is a history of any previous symptoms of appendicitis, an exploratory operation, undertaken not long after the first symptoms of fever are noted, might prove life saving by furnishing the opportunity for the evacuation of the infectious material that was finding its way into the tissues.

In a word, there would seem to be a splendid opportunity for a more thorough individual study of cases of puerperal fever than has hitherto been the case, since it has been the custom, as a rule, to group all such cases indiscriminately under the head of infection due to carelessness on the part of the attending physician or nurse. It is probable that not a few medical attendants have been brought under suspicion of carelessness in technic when in reality the source of the infectious material was some previously existent microbic condition newly aroused by the disturbance of anatomic relations within the abdomen.

THE WHITE AND NEGRO PELVIS.

Riggs [11] finds that but little work has been done towards comparing the pelves, the children and the labors of white and negro women, but at the Johns Hopkins Hospital, where the clinic is almost equally divided between the two races, conditions are especially favorable for such work. Of 1,500 cases which have been carefully measured and tabulated, 779 or 52% were white and 721 or 48% were colored. Of these 90% had normal pelves in white women, and only 65% in colored women. Generally contracted pelves were present in 4.6% of whites and in 23% of negroes. Simple flat pelves, whites 3.33%, negroes 1.94%. Rachitic pelves, whites 1.28%, negroes 9.7%. These figures show the marked frequency of pelvic contraction in the negroes, with the generally contracted and the rachitic types especially predominant. This corresponds with previous statements that the pelves in women of the lower races are narrower, but relatively deeper than in white women. A point of importance is that it is common in measuring the diagonal conjugate of a negro woman whose external measurements are definitely contracted to find that we must classify the pelvis as normal.

The average duration of labor in both races is practically the same, but when the pelvis is normal there is a difference of over two hours in favor of the negro. The children average larger when the mother's pelvis is normal than when it is contracted. The largest children are born to women living in comfort and taking moderate exercise, next in size come the children of women who are physically robust and who live a vigorous out-of-door life, while the smallest children are born of mothers who live and work amid unhygienic surroundings and are insufficiently nourished. The white children exceed the colored in size, while in both races the children of multiparæ are larger than those of primiparæ. Riggs says it would be most satisfactory if, as Lane attempted, we could formulate some rule which would serve to express the relation between the size of the child and that of the pelvis of the mother, but he believes it cannot be done. Lane stated that in general with every degree of increase in the length of the conjugate there is a proportionate increase in the weight as well as in the biparietal diameter of the child's head. He formulated the law that, "The child grows in utero in such a manner and at such a rate that at full term his size is proportionate to that of the mother's pelvis through which he must pass in order to be born." According to Riggs' tables, cephalic presentation and spontaneous labors occur less frequently among white women than among colored, in spite of the fact that contracted pelves are so much more common in the latter. While he is able to demonstrate that the negro child weighs and measures considerably less than the white child, he can state only as a matter of clinical experience that its head is softer and more readily moulded to the outlines of the pelvic canal. He believes this is a conservative provision of nature in the present condition of the negro race, as a preventive of serious dystocia.

[11] Johns Hopkins Hospital Reports, 1904, xii.

RUPTURE OF UTERUS AFTER CESAREAN SECTION.

Two cases of this rare accident have recently been published, of which there have been only seven cases reported before.

Kerr's [12] case had been delivered by Cesarean section two years before by him, the "fundal incision" in the uterus being used. The patient collapsed while waiting quietly in the hospital for the second operation. The abdomen was opened and the fetus with intact membranes and placenta were in the abdominal cavity, while the uterus was retracted behind and down towards the pelvis. Hysterectomy was performed and the patient recovered. The rupture of the uterus was right through the old cicatrix in the fundus, the wound simply giving way, he believes, quietly, the child being born slowly through the rent.

In connection with such a case, Kerr proposes these questions: (1) Did the fact that the incision was a fundal one predispose to rupture? (2) Was there anything in the uterine wound at the previous Cesarean section which favored rupture? (3) Is the danger of rupture of the cicatrix such that one should condemn non-sterilization?

He concludes that it does seem, *prima facie*, highly probable that a fundal cicatrix is more liable to give way than the anterior one, because of adhesions which act to support the uterus, and also because the fundus is thinner than other parts of the uterine wall. He finds that only one other of the reported cases was a rupture through a fundal incision.

In answer to the second question,[13] the fact that the placenta in the first operation was found

[12] Jour. Obstet. and Gyn., Brit. Emp., 1904, vi. No. 5.
[13] Brit. Med. Jour., June 17, 1905.

under the uterine incision, and that he had consequently to stitch the placental site, which was very spongy and vascular, causes Kerr to believe that union may not have been so firm under such circumstances. Not only that, but the placenta in the second pregnancy was implanted over the fundus and the old cicatrix, which doubtless also favored rupture.

He points out that there may be danger of any cicatrix giving way, and consequently there is a distinct danger in not sterilizing a patient and in allowing her to become pregnant again. At the present time, the tendency is in favor of not sterilizing a patient at the first operation, largely because the results of the first and subsequent operations have been so good.

Henkel [14] reports a case who had Cesarean section performed twice, at the next labor the uterus ruptured without known cause. The rupture was in the anterior wall, from cervix to fundus, the fetus and placenta being in the peritoneal cavity. The uterus was sutured and left in, the patient recovering.

CAUSATION OF PUERPERAL INFECTIONS.

Foulerton and Bonney [15] made cultures from the uterine discharge of puerperal patients, in both normal cases and those in which fever occurred. In all the cases, twelve in number, in which the puerperium was normal, examinations being made from the third to the tenth day after normal labor, the contents of the uterus was sterile. In 54 cases in which fever occurred, after miscarriage or labor at term, 15 were found apparently free of bacteria, and bacteria were found in the remaining 39. Some of these fever cases were very mild, but of the severe cases streptococci were present in 62.5%. The staphylococcus, the pneumococcus and the colon bacillus were also found in some cases. Cultures made from the cervical secretion in 30 non-pregnant women showed the presence of various bacteria in 16 cases.

In 14 cases of puerperal fever which ended in death, 10 were cases of streptococcic infection. In 26 severe cases which recovered there were 16 patients who had a streptococcic infection of the uterus and two who showed streptococci in the vagina, while of 14 cases of slight fever none had streptococci. The next most important organism was the pneumococcus, which accounted for three other fatal cases, while the cause of another fatal case was uncertain.

With respect to the source of infection of puerperal fever, it is stated that it may be found either in the person of the patient herself, or it may be conveyed by those who attend her in her confinement. In the former case fever arises from a spontaneous invasion of the uterus by bacteria present in the cervical canal or the upper part of the vagina at the beginning of labor. There has, however, been difference of opinion on the question of auto-infection, that is, of infection from sources within the patient herself, in the causation of puerperal fever, and the general trend of opinion at the present time is that such sources of infection may in general be disregarded, and that the obstetrician has only to guard against infection from without. They believe that the safe course for the practitioner to adopt is to deal with every case of puerperal fever in which the temperature rises above 102 as if it were a case of streptococcus infection. For the serum treatment to be applied with any reasonable hope of success under present conditions a compound serum from a horse immunized against the various strains of streptococci which are met with in puerperal infections is necessary, and by its use a considerable reduction in the mortality of puerperal fever could be effected. They consider that the use of the curette should be absolutely discarded in the treatment of puerperal uterine infection. The best local treatment recommended is digital exploration of the uterus, and the removal in this way of any retained fragments, with a subsequent douching with an antiseptic solution.

[14] Ztschr. f. Gyn., 1905, No. 15.
[15] Lancet, April 8 and 15, 1905.

Reports of Societies.

AMERICAN MEDICAL ASSOCIATION.
SURGICAL SECTION.

PORTLAND, OREGON, JULY 11, 12 AND 13, 1905.

(Concluded from No. 7, p. 201.)

THURSDAY, JULY 13.

EXSTROPHY OF THE BLADDER SUCCESSFULLY TREATED BY PETER'S METHOD, WITH ILLUSTRATIONS.

DR. HARRY M. SHERMAN of San Francisco, discussed at considerable length Peter's method, extraperitoneal, as contrasted with Maydl's method, intraperitoneal, particularly as regarded passivity of technique and results. He referred to the need of an ureteral catheter during the operation and the danger of it afterwards. He considered the time of closure of the abdominal opening and claimed that primary closure was preferable although secondary closure was satisfactory. He concluded his paper by detailing at considerable length the case upon which he had operated by this method.

DR. E. A. WELLS of Hartford, referred to two cases operated upon by Dr. Hartley of New York, one for extrophy and the other for chronic tubercular cystitis. He gave the details of the operations, both of which were successful, and advised great care in the use of the ureteral catheter and the doing of the operation when possible without opening the peritoneal cavity.

DR. L. L. MCARTHUR of Chicago, referred to some experiments made by Dr. Peterson of Ann Arbor and Dr. Martin of Chicago with a method of implanting the ureter into the rectal wall so as to militate against the backward regurgitation. He claimed that the great advantage about their method was that the fecal masses tended to milk rather than to crowd into the ureter, thus materially lessening the danger of an ascending pyelitis.

DR. SHERMAN closed the discussion by stating that he considered Dr. Hartley's method nothing more than the regular Maydl operation. He referred to some experiments made by Dr. Tait and himself on the transplantation of both ureters in dogs, all of which died from peritonitis. The only case where

ascending infection has occurred following operation done by Peter's method was in one where Peter kept the catheter in too long. Dr. Sherman considered that the operation was exceedingly simple and very valuable.

TUBERCULOSIS OF THE KIDNEY.

Dr. J. Garland Sherrill of Louisville, believed this affection was worthy of more consideration than had generally been accorded it. He referred to the classification of Kroenlein "solitary" and "combined" tuberculosis of the kidney, modes of infection, and stated that the majority of cases showed the infection to be a descending one. The interference with the urinary outflow he claimed predisposed to both ascending and descending infection and conditions that favored the development of the disease anywhere were particularly active here. After taking up the pathology, symptomatology and diagnosis, and stating that if a diagnosis could be established early, while only one kidney was affected, much could be done for these patients, he referred to the following as the most valuable diagnostic symptoms: painful, frequent urination, polyuria, hematuria, pyuria in acid urine and detection of bacilli. The methods of determining which kidney was effected and the efficiency of the other were given, and it was urged that these points should be determined before operation, except when other conditions demanded interference. In his opinion, the operation of choice was complete nephrectomy or nephro-ureterectomy if the ureter was diseased.

Dr. O. C. Smith of Hartford, advised persistent search for the tubercule bacillus in these cases. He urged the collection of a twenty-four-hour specimen, which should be searched several times, and if the germ be not found he advised that the specimens be centrifugalized and inoculation made into a guinea pig. Cryoscopy and skiagraphy were commended as valuable aids in diagnosis and reference was made to an improved technique employed by Dr. Cole of New York.

Dr. M. H. Richardson of Boston, stated that one of the first questions to be decided in these cases was whether or not both kidneys were affected, but still more important, in his opinion, was whether, in case of a proposed operation on one kidney, there was a second kidney, and if so if it was capable of carrying on the elimination. In his opinion, the only way to treat this condition, provided the foregoing was true, was by total extirpation. After removal of a tubercular kidney, if sinuses existed that were dependent upon the tubercular focus, he felt that the chances of a permanent cure were not worth much. In conclusion he compared this disease with malignant trouble and urged the same radical measures in its treatment.

Dr. Huntingdon of San Francisco, agreed with Dr. Richardson in recommending the total removal of the kidney in these cases and referred to three cases where this had been done with very good results. He recommended more optimism in the future in reference to the results of extirpation in the early stages.

Dr. Casper W. Sharples of Seattle, referred to the importance of hemorrhage in this condition, which, he said, might be associated with some irritation of the bladder and some painful urination, although not necessarily so. He related a case upon which he operated for tubercular kidney which died from pulmonary hemorrhage eighteen hours after operation, although no evidence could be found of any tubercular deposit in the chest.

Dr. Munzen of Wisconsin, reported having observed Dr. Mayo inject 20 drops of carbolic acid recently into the ureter in a case of tuberculosis of the kidney to obviate the necessity of removing the ureter.

Dr. Jacob Frank of Chicago, commented on the value of cystoscopic examination of the bladder in cases of tubercular kidney and stated that in his experience it was in the descending type and not the ascending that the ureter was generally enlarged. He spoke in favor of performing the operation of extirpation in two parts and reported having opened the pleura accidentally while operating in one case, with the resulting death of the patient, although it was possible, in his opinion, that death was due to the failure of the kidneys to perform their function, and to the presence of stone. He also reported a case upon which he operated sixteen years ago which has remained fairly well ever since although the bladder symptoms have never subsided. He urged the making of a diagnosis before the bladder had become accustomed to emptying itself so often, thus securing a better likelihood of bladder symptoms subsiding after operation on the kidney.

Dr. Sherrill closed the discussion, by referring to the question of passing the catheter through an infected bladder into a sound ureter, which, he believed, could be done with safety. He approved of Dr. Mayo's method of injecting carbolic acid into the ureter provided the ureter was not very much affected. He looked upon the bladder symptoms as important and considered dysuria and polyuria as very early signs. When present he advised prompt search for the tubercle bacillus or for bacteria, preferably employing many specimens than looking at one specimen several times.

TREATMENT OF CONGENITAL DISLOCATION OF HIP, WITH REPORT OF CASES.

Dr. Park Weed Willis of Seattle, described in full his method of manipulative reduction by gentle repeated manipulation, stating that he resorted to open incision when, after a fair trial, manipulation had failed. He stated that he changed the casts with comparative frequency. The result of one case of double dislocation was anatomically perfect and of another failure to maintain reduction. Upon making an open incision the capsule was found adherent across a very shallow acetabulum; reduction was performed but the limb being found later on the dorsum reduction again became necessary an anatomically perfect result, although with stiffness and slight abduction. He also reported a case of double dislocation with poorly developed acetabular cavities. His result in this case was anatomically perfect, while in another similar one he secured anterior transposition. He concluded his paper with a report of two adult patients with single and double dislocation respectively in which he secured a good result with comparatively slight disability.

Dr. Hunkin of San Francisco, urged the replacing of the hip in every case by the quickest and easiest manner possible. He stated there was no question about the best surgical proceeding being an open incision down to the capsule, division of the capsule, and putting the head of the bone in the acetabulum, provided there was one. He considered the great difficulty was to keep it there. In his opinion the most essential part of the operation was the wearing of a splint from six to ten months, and he advised that one which opened at the side be worn every night even though it be dispensed with during the day.

Dr. DeForest Willard of Philadelphia, referred to the hysterical nature of the newspaper articles on this subject about a year ago, at the time of the visit of Dr. Lorenz, and spoke against his plan of treating these cases. He expressed himself as being in favor

of Dr. Willis' procedure of gentle manipulation provided it could be performed successfully, which he seemed inclined to doubt. He did not believe that a little improvement in the walking of a child and particularly of men was important compared with their being better prepared to do their work. He reported the results of three operations performed on three of his patients last year by Dr. Hoffa, in none of which was a very satisfactory result obtained. Commenting on the prognosis he advised great caution and compared the acetabulum in many cases to a tea saucer instead of, as it should be, a tea cup.

Dr. C. O. Thienhaus of Milwaukee, reported having noticed that one more often had to deal with a hyperplasia in the acetabulum than a hypoplasia.

Dr. Harry M. Sherman of San Francisco, believed that Dr. Willis had accomplished a great step in advance in the treatment of these conditions if he was able to secure and maintain the reduction by the methods he advocated. On general principals, however, he objected to the fearful manipulation of Lorenz or the bloody operation of Hoffa, and spoke in favor of the open incision.

Dr. Parker of Portland, reported the case of a grandmother aged sixty and weighing 200 lbs. who had had congenital dislocation without any other discomfort than a limp; her oldest daughter with a similar condition on the same side, and her granddaughter, who was perfectly sound.

Dr. James E. Moore of Minneapolis, protested against the use of the words "bloodless operation," saying it was a misnomer and referred to the most unsurgical procedure with which he was acquainted. He believed the Lorenz method left the patients in a worse condition than they were before and recommended open incision in the future.

Dr. S. C. Baldwin of Salt Lake City, looked upon the Lorenz method as a very bloody one, and objected to the Hoffa operation. He believed that in the future the standard method of treatment would be the open incision along the lines described by Dr. Sherman.

Dr. A. J. Ochsner of Chicago, reported having seen thirty cases operated upon with good results by the manipulative method and believed it was a perfectly safe and justifiable procedure provided the cases were properly selected and the operator thoroughly understood its performance.

Dr. Willis, in closing, did not consider the open incision a surgical procedure, but claimed that it produced stiff joints and crippled patients. He believed enough germs could get into a small opening over one hip to ruin both hips, and called attention to the difficulty of maintaining the reduction after it had been successfully performed.

UNUNITED FRACTURES IN CASES OF DELAYED UNION.

Dr. Casper W. Sharples of Seattle, W., dwelt at some length on the symptoms, pathology, diagnosis, prognosis and treatment of this condition. He also gave the details of a number of cases occurring in his practice with the results of treatment in each.

Dr. Martin of New Orleans, believed that many cases of ununited fracture were due to improper reduction or the interposition of tissues, and advised making sure that crepitus could be elicited after reduction, this being in his opinion a sure sign of bony apposition. He was not in favor of cutting down in these cases unless absolutely necessary, nor did he believe that the use of wire was sufficient to hold the bones in place. He spoke in favor of the use of a staple made of piano wire, and expressed himself as being in favor of drainage in all cases.

Dr. Huntingdon of San Francisco, believed that in almost every case delayed union was due to faulty position. He felt that the use of the x-ray should make it possible to secure apposition, but he did not consider that the eliciting of bony crepitus was enough to decide that this result had been obtained. He looked upon fractures of the shaft of the femur as being particularly liable to becoming misplaced owing to the strength of the opposing muscles.

Dr. Harry M. Sherman of San Francisco, considered the tearing off of the nutrient artery the principal cause of delayed union, or non-union, in many cases. He called attention to the fact that the upper fragment heals alone and the lower fragment never does. He looked upon the existence of crepitus as a pretty satisfactory sign of the bones being in apposition and recommended the use of the x-ray in addition, but spoke strongly against the x-ray being used for diagnostic purposes in place of the older methods.

Dr. Hunkin of San Francisco, believed that the principal trouble was the failure to secure immobility at the seat of injury and claimed that the profession was afraid to put the splint on tight enough for fear of swelling. He insisted that swelling would not take place, never mind how tight the splint provided the preasure was evenly graduated, and recommended its tight application very strongly in all cases.

Dr. W. J. Means of Columbus looked upon delayed union as largely due to malnutrition. He did not believe ambulation did any good in the absence of apposition.

He thought it wise to avoid the use of any material, absorbable or otherwise, unless compulsory, and claimed that he got better results when he did not drain than when he did drain.

Dr. Sharples, in closing, reported having gotten good results from the use of silver wire but believed the saving of the periosteum was the most important factor in securing good union. He looked upon fibrous tissue intervening between the ends of the bones as nothing more than an attempt to heal the parts. He agreed that the tearing off of the nutrient artery was most important, and felt sure he had seen cases of ununited fracture due entirely to that condition.

SITE OF ORIGIN OF GALLSTONES.

Dr. L. L. McArthur of Chicago, reported a very interesting case of gallstones and showed the liver with the stones *in situ*. The important point was that for several days after he had removed all the stones he could find they continued to pour out of the wound through a tube which he had found it necessary to insert for that purpose.

Dr. O. C. Thienhaus of Cincinnati, considered the question of cholecystectomy and cholecystotomy and felt that the experience of Dr. McArthur should have a direct bearing upon one's method of operating.

Dr. M. H. Richardson of Boston, did not feel that a surgeon should reproach himself never mind how many stones might come away subsequent to his operation. He referred to some cases illustrating the formation of stones in the liver instead of in the gall bladder, and mentioned a few symptoms by which one might at least suspect the existence of stone, even after an operation for their removal. In order to avoid the occurrence of this condition he strongly recommended the employment of an incision large enough to admit the surgeon's hand.

Dr. Robert F. Weir of New York, suggested a method of securing a sufficiently large incision to enable one to thoroughly explore the liver.

Dr. McArthur, in closing, stated it was very evident that never mind how far into the liver substance one might go at the time of operation he could not be sure that all the stones had been gotten away.

FRACTURES OF THE LEG, THEIR DIAGNOSIS AND TREATMENT, WITH REPORT OF CASES AND DEMONSTRATION OF X-RAY PICTURES.

DR. C. O. THIENHAUS of Milwaukee, presented a large number of pictures illustrating various varieties of fractures of the leg, but more particularly of the foot, together with his method of treatment and the results obtained.

DR. R. W. KNOX of Houston, reportd the case of a fireman whose foot was crushed by the driving wheel of his engine. Dr. Lorenz saw the case, and felt that reduction of the bones would be impossible, but upon the man consenting to operation it was performed with good results.

DR. THIENHAUS, stated that if a subastragaloid dislocation could not be reduced immediately the open operation must be done, and if that was not successful the entire astragaloid must be removed.

The Section elected Dr. Robert F. Weir of New York Chairman, and Dr. A. C. MacLaren of St. Paul as Secretary. Dr. A. F. Jonas of Omaha was elected as the delegate from the Section to the House of Delegates, and the thanks of the Section to the Rector of the First Presbyterian Church for its use for the meeting and to the retiring Chairman and Secretary for the excellent program were carried.

Recent Literature.

The Vermiform Appendix and Its Diseases. By HOWARD A. KELLY, A.B., M.D., Professor of Gynecology in the Johns Hopkins University, Baltimore, and E. HURDON, M.D., Assistant in Gynecology in the Johns Hopkins University, Baltimore. With 399 original illustrations, some in colors, and 3 lithographic plates. Philadelphia and London: W. B. Saunders & Co. 1905.

This is undoubtedly the most elaborate work on appendicitis that has ever been written. The beauty of the illustrations places the book in a class by itself, for it is obviously a "labor of love." It is significant that this work has been written by a distinguished gynecologist and it shows very clearly that, after all, gynecology is simply applied surgery. The boundary line between gynecology and surgery is so indefinite and vague that this work in itself will do much towards obliterating completely the alleged distinction between the two specialties.

While the illustrations command one's first attention, and one cannot but recognize the good fortune of Dr. Kelly in having the co-operation of Mr. Horn, Mr. Brödel, Miss Huntington and Mr. Becker, yet the text is all that one could expect. The book is not one that the general practitioner and the student will need, but it will always serve as a reference book.

The subject of appendicitis is divided as follows: History; anatomy; physiology; the natural history of appendicitis; the vermiform appendix at autopsy; bacteriology; pathology; etiology; clinical history; diagnosis; appendicitis in typhoid fever; appendicitis in the child; typhlitis; operations; abscess in the neighborhood of the appendix; peritonitis; care of patient after operation; relation between appenditicis and gynecological affections; relations of appendicitis to pregnancy, labor, and the puerperium; neoplasms; clinical history of the specific infections; operative treatment of neoplasms and specific infections; hernia of the appendix; medico-legal aspects of appendicitis. A full list of names of the writers who have contributed to the subject of appendicitis is appended.

The book lacks that most important quality — a perspective. The amount of information contained within its covers is overwhelming, but there is an absence of selection. The treatment is thoroughly judicious and the complications that may exist are fully and clearly presented.

Many of the chromo-lithographs are beautiful pieces of work. The plate "Suppurative thrombo-phlebitis of the mesenteric veins with multiple abscesses in the liver following appendicitis" is of great value, for it will show the surgeon a state of affairs that may exist in connection with any appendix. The plate "Reconstruction of the blood supply of the appendix, magnified 16 times" is most instructive.

Various chapters in the book have been written by friends and associates of Dr. Kelly. Dr. Kelly says something in reference to the illustration of medical works which we quote:

"The changes in the appearance of an organ brought about by diseases are often manifested in such delicate deviations from the normal topography that it requires the hand and eye of a genuine artist, and one who is also a well-informed anatomist and careful pathologist, to represent the morbid condition accurately. The sense of vision, when unaided, often fails to grasp the significance with completeness, and in such a case the true artist will palpate the fresh specimen and then represent the combined results of sight and touch. The superficial structure alone is frequently insufficient to demonstrate the character of the specimen, and the artist must find means of exhibiting the surface relations in association with the interior. This can be done: (1) By inserting lines; (2) by cutting away portions of the surface and thus displaying the depth; (3) by magnifying the organ and drawing it as though translucent, and (4) by explanatory diagrams, cross-sections, etc.

"From these considerations it is evident that an intelligent interpretation of a pathological specimen or of an anatomical or clinical demonstration through the eye and hand of a trained scientific artist must be vastly superior as a means of instruction to the best photograph. Yet how often when we appeal to an illustration for light on a difficult text do we find a hazy, woolly, milky, or coarse drawing, which only succeeds in leaving our confusion worse confounded.

"Good, true illustrations are a most valuable handmaid in medical instruction, for what the eye of the student has grasped remains, as old Horace memorably said, indelibly impressed after a fashion unequaled by the clearest verbal description. I would beg the reader, therefore,

not to be satisfied with glancing hurriedly over these illustrations and their legends, returning at once to the text, but to study each figure with care.

"The essential feature, its center of interest, is generally emphasized by greater contrast in shading, by which the attention of the observer is insensibly focused. The differences in the tone value of the peritoneum over the small and large intestine, and of the fat, adhesions, etc., are given in a manner as realistic as is possible in black and white drawings. Cysts are made translucent as in the fresh condition. The method of making our originals, whether pen and ink, half-tone, or color, has been selected with a view to the use for which the picture was designed. A simple topographical relationship is best shown by line drawing, and steps in an operation, half schematically represented, are done in pen and ink. For anatomical and pathological characteristics where delicate surface structures and plastic effects are required, we have used wash drawings adapted for half-tone reproduction.

"In the microscopic pictures even the individual cells have been drawn with the utmost fidelity; in no case have they been schematized. Many of the pictures will be best appreciated if studied with a low-power hand lens."

On the whole, we have nothing but words of congratulation to Dr. Kelly and the publishers for having accomplished this superb piece of work.

Enlargement of the Prostate: Its Diagnosis and Treatment. By JOHN B. DEAVER, M.D., Surgeon-in-Chief to the German Hospital, Philadelphia. Assisted by ASTLEY PASTON COOPER ASHURST, M.D., Surgeon to the Out-Patient Department of the Episcopal Hospital, Assistant surgeon to the Orthopedic Hospital, and to the Dispensary of the German Hospital. Illustrated with 108 full-page plates and a colored frontispiece. Philadelphia: Blakiston's Son & Co. 1905.

We offer our cordial congratulations to the authors of this admirable work, which certainly should be accorded a place among the most valuable contributions to the literature of the subject of which it treats — by no means faint praise at this time, when there are so many others of high order that have been recently published with regard to this branch of surgery.

From whatever point the work of Drs. Deaver and Ashurst is regarded it fulfills even the most exacting demands. This is true of the historical summary which forms the introductory part of the volume, as well as of the anatomy, embryology, and operative treatment of the enlarged gland. Finally, it is an artistic bit of bookmaking which may well stand as an example to other writers and publishers as a standard of the sort of work that should be done in this respect.

The illustrations, which are numerous, and in many instances of a novel character, are of the best, and, as was to be expected from the well-deserved reputation of the elder of the two authors as an anatomist, the anatomical part of the work is especially well presented.

The historical sketch we are gratified to see so fully and accurately done. It comes most appropriately at a time when there are a number of surgeons who are introducing operative techniques under the impression that they are original with themselves but which, as a matter of fact, have been conceived and described by their predecessors, and some of the younger members of the profession will do well to study this part of the volume carefully before going into print as originators of new operative methods.

We do not share the view of Dr. Deaver with regard to the relative value of the perineal and the suprapubic operations. He gives the preference to the latter as the operation of choice — other things being equal — while the contrary is true in our belief. In this judgment we are supported by the large majority of the best experts in this country and in France, and, as we think, with good reason, because of the simple fact that the enlarged gland can be removed in as short, if not shorter, time and *is* removed with a very importantly smaller mortality than is the case with the high operation, and again because there are no disadvantages especially attaching to the perineal operation that make it less desirable than the suprapubic route. Until some surgeon can produce a series of cases with as low a mortality by the latter method as those Young, Goodfellow, and Albarran have reported of the perineal operations, the view we have taken must prevail in favor of the perineal operations. The results are but little if at all less good, while the mortality is at its best about one half as great as the best of the suprapubic operation.

On the other hand, we wholly agree with his opinion that minute cystoscopic study prior to operation is an entirely useless procedure, and a needless annoyance to the patient, and again in his view to the effect that the importance of preserving the ejaculatory ducts has been greatly exaggerated, and that it is, to say the least, of very doubtful advantage. Still another point of view with which we cordially agree is that there is no advantage to be derived from the instrumental dissections of the prostate and the elaborate technique in connection with the perineal operations of which so much has been made by some operators in France and by a few in this country.

But it is not the province of the reviewer to enter upon a discussion of the special points of such a work as the one we are considering. Whatever may be the individual beliefs as to the merits of the operative methods, there can be but one opinion, we think, as to the character of the present work. It deserves to be ranked among the classics, and we unreservedly commend it to the professional reader who may be interested in this subject as one of the best among the many good works that treat of it.

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A SANITARY RESEARCH LABORATORY.

We are in receipt of the first volume of work which shows much promise of usefulness. It is a series of contributions from the Sanitary Research Laboratory and Sewage Experiment Station of the Massachusetts Institute of Technology, the individual papers being reprinted from the *Journal of Infectious Diseases*. In 1902 five thousand dollars a year for three years from an anonymous source was given the Massachusetts Institute of Technology for the purpose of experimenting upon methods of sewage disposal; and also for following investigations in other countries; for utilizing this knowledge; for original experiment; for distributing the information thus gained, and for encouraging students to make definite statements of the results of their study. Although it was recognized that much larger sums had been employed in other places for the same general end, the authorities of the Institute of Technology nevertheless accepted the grant under the prescribed conditions. An experiment station was secured in Boston, connections with the main sewer of the Boston drainage system were made, a sewage pump and such other apparatus as was necessary for experimental purposes were installed. In July, 1903, work was begun under the general heading of the Sanitary Research Laboratory and Sewage Experiment Station of the Massachusetts Institute of Technology. Since then the work has progressed upon the character of the sewage discharged from one of the Metropolitan Districts into Boston Harbor. Experiments were also undertaken upon its purification by various processes. The staff connected with the station, headed by Dr. W. T. Sedgwick, has consisted of men either at present or formerly connected with the Institute of Technology in the general departments of biology, chemistry and sanitary engineering. The volume to which we alluded at the outset embodies the first published work of the laboratory, and it is expected that a second volume giving the results of two years' series of experiments will be forthcoming. Several popular essays on hygiene have also been published for general distribution, thereby fulfilling one of the clauses of the original gift. The papers in this volume are naturally technical and chiefly of interest to experts in such matters. They constitute a valuable addition to the subject of sewerage in general, and particularly with relation to the conditions met with in this city. The second volume will be awaited with interest. Relatively small as the amount of money placed at the disposal of the Technology authorities was for the contemplated object, it is suggestive to note how much has been accomplished by its means. Money given for such a purpose, even though it be small in amount, is sure to be well invested, provided its disbursement be placed in competent hands. Could various departments of medicine be endowed even in small degree, allowing a certain latitude in the expenditure of the funds, work of value could undoubtedly be accomplished which is quite impossible under existing conditions. This has been again and again exemplified in those instances, unfortunately few in number, where money has been so employed.

MEDICAL SCHOOLS OF THE UNITED STATES.

The profession is indebted to the *Journal of the American Medical Association* for many statistical inquiries which imply much labor. We have commented from year to year, for example, on the studies which have been made under its auspices regarding the prevalence of tetanus and other results of accident following the Fourth of July celebration. Apart from the natural interest which this matter excites, it has undoubtedly done much to stimulate a true conception regarding the avoidable dangers of certain forms of explosives which the public and finally the legislatures have come to recognize.

In last week's issue of the journal a most valuable statistical summary of the medical schools of the United States is presented. A brief description of every college in the United States permitted by law to confer the degree of doctor of medicine is given, including sectarian

institutions whose graduates legally are physicians. This information has been largely obtained from catalogues approved by the dean of each school. The list is naturally a long one and contains in condensed form an enormous number of facts which it is well for those interested in medical education to ponder deeply. Few states are unprovided with at least one medical school and many have two or more. Seventeen states are, however, unprovided, among them being New Jersey and Rhode Island.

The situation in the Philippine Islands is interesting. There is in Manila a medical school which bears the name University of St. Thomas Medical Department. This university was founded by papal decree in 1587, but the medical school was not added until 1871. The faculty now consists of eighty-one and the course extends over six years, each of nine months, the first being preparatory and the last optional. The total registration for 1903–4 was sixty-eight with fourteen graduates. Judging from the names of the rector and secretary, the school is under the direction of the Spaniards or natives. In this connection it is interesting that at a recent meeting of the Philippine Islands Medical Association it was recommended that a modern school of medicine be established in Manila as a part of a general university. In this same number of the journal Dr. John R. McDill writes a valuable paper on the status of medical affairs in the Philippine Islands which should be read by those who wish to see modern medical methods extended into this region. It is perfectly clear that before many years have passed the demands for a modern medical school in the Philippines will become insistent. The need is already apparent and the possibilities of study have long since been recognized through sending students from various American universities to investigate the problems which may be best worked out there. As a matter of fact, on the practical side, it appears that with a population of about seven million and a half the total number of licensed physicians is only three hundred and sixty, of whom two hundred and seventeen are in Manila. In the provinces, therefore, there is one physician to over fifty-one thousand inhabitants, each physician covering theoretically four hundred and thirty square miles. Dr. McDill estimates that during the next twenty years two to three thousand physicians and sanitarians should be educated to meet the needs of the country.

With these facts before us, quite apart from the unusual possibilities for investigation which the Philippines offer, there can be no question that, however much we may be overstocked with medical schools in our large cities at home, there is vital need of a properly equipped school for our distant possessions. The opportunity which this offers for the development of our younger men, and for the positive good of the country itself, cannot be long overlooked, and we have no doubt that before many years a certain vent will be given for the overcrowding and discouraging conditions existing at home. As pointed out also in the statistical study to which we have alluded, there is some sign of encouragement in that but one new medical college has been formed during the year; the benefit also of merging small medical schools into larger ones, and often associating them with universities has been more generally recognized and is a distinct sign of progress.

MEETING OF THE AMERICAN PUBLIC HEALTH ASSOCIATION.

As announced in another column, the American Public Health Association will hold its annual meeting in this city the latter part of September. This society, more than most, should excite the interest not only of physicians but of the public in general. The topics which it discusses are eminently practical and for the most part easily understandable by the laity. Although as yet the definite program has not been announced, the preliminary list of topics for discussion indicates how broad the field has become which this association is called upon to cover. Among the general topics, for example, methods of securing more uniform instruction and co-operation in health work, water, tropical hygiene, quarantine methods, recent studies in smallpox, disinfection, sewage and waste disposal, and car sanitation will be discussed. There are few intelligent people who are not deeply interested in one or another of these subjects and we have no doubt, therefore, that the coming meetings will be much more than the ordinary gathering of specialists whose work is of so technical a character that it excites small interest even in the profession. Dr. H. P. Walcott of Cambridge, chairman of the Massachusetts State Board of Health, is the chairman of the local committee on arrangements. In general, so far as one may judge from the preliminary announcement, this meeting will be as great a success from the scientific standpoint as was its predecessor held in Havana last year.

MEDICAL NOTES.

Yellow Fever. — The official figures for New Orleans, Aug. 21, show 61 new cases of yellow fever, with 9 deaths. This makes the total of cases up to this date 1,446 and the total deaths 205. In general it is felt that the situation throughout the state is not altogether satisfactory. There is special difficulty in impressing upon the Italian population the necessity of precautions, and force is at times necessary. The Marine Hospital Service has taken special pains to prevent a second outbreak of the disease next spring. It is stated that Major Ronald Ross, professor of tropical medicine, and Dr. Rupert W. Boyce, professor of pathology in the School of Tropical Medicine at Liverpool, are to make a study of the epidemic in New Orleans.

International Anatomical Congress. — It is announced that the International Anatomical Congress will meet in Boston in 1906. The session this year was held in Geneva.

Bromide in Epilepsy. — In a signed editorial, published in a recent number of the New York *Medical Journal*, Dr. William P. Spratling, superintendent of the New York Colony for Epileptics at Sonyea, gives it as his opinion that the bromides are of relatively small value in the treatment of epilepsy. This opinion he has reached after an experience in several thousand cases extending over fifteen years. Of the patients admitted to his institution he asserts that not more than 50% or 60% should be given the bromides in any form. The dose, too, as ordinarily administered is much too large. From ten to twenty grains three times a day as a routine treatment is quite sufficient. He speaks most favorably of a diet poor in salt, which augments the value of relatively small doses of the bromides. He notes with satisfaction the rarity of cases of dementia through the excessive use of bromides. The real advance in treatment is due to the fact that we are getting over the idea that the convulsion is the disease, and are treating each patient as an individual.

Autopsies at the Craig Colony for Epileptics. — According to the *Medical Record* the last legislature gave to the authorities of the Craig Colony the right to make autopsies on the bodies of epileptics dying at the colony who had been supported therein wholly at the state's expense. The following is the clause in which such authority is given: "The superintendent shall have power, subject to the supervision and control of the board of managers, in case of the death of any patient at such institution who shall have been maintained therein wholly at public expense, to make, or cause to be made, at the said Craig Colony by a member or members of its medical staff, an autopsy on the body of such patient, provided that such autopsy be made not later than twelve hours after the death of such patient, and that it be confined exclusively to the brain, and made in such a manner as will cause the least possible mutilation, and provided, also, that the said Craig Colony shall print conspicuously upon all application blanks used in admitting patients to the institution the fact that the officers of said colony have the above stated powers in relation to the making of autopsies." Previous to the enactment of this law autopsies were made on 50% of the patients dying at the colony, and it is believed that under the new law autopsies will be made in fully 95%.

Medical Men in the Italian Parliament. — A number of physicians have recently grouped themselves together in Italy as a part of the Italian Parliament who will direct their efforts toward influencing legislation relating to public health and the interests of the medical profession. Already under the auspices of this group of physicians a general congress of medical practitioners and allied professional men has been arranged for the discussion of questions regarding professional interests. This congress will be held in Rome in November.

Norman Kerr Memorial Lectureship. — Dr. T. D. Crothers of Hartford, Conn., has accepted an invitation to deliver the first oration in the Norman Kerr Memorial Lectureship, at London, England, Oct. 10, 1905. Dr. Kerr will be remembered as an eminent London physician who made a special study of inebriety, alcoholism and other drug disorders. He wrote several excellent books on this subject, and was instrumental in securing the enactment of laws for the control of inebriates, and the promotion of hospitals for their care throughout Great Britain. He founded the British Society for the Study of Inebriety, in 1884, and this society and his friends have organized a memorial lectureship for yearly orations on his life and work.

Crusade in Iowa Against Unsanitary Passenger Cars. — According to the New York *Medical Journal* the State Board of Health of Iowa has taken up the matter of co-operating with other state boards to bring to the attention of the railroads the fact that the passenger cars are unsanitary. The secretary was instructed

to take the matter up in correspondence with the other boards at once. It is proposed both to carry on a campaign of education and interest the other boards and also, if the railroads do not volunteer to make proper changes, to ask Congress and the various legislatures to enact legislation. It is averred by the board that the cars should be constructed of fireproof material and that they should be kept cleaner.

Death of Dr. Joseph P. Cochran. — The death of Dr. Joseph P. Cochran of typhoid fever in Uramia, Persia, has been announced. He was born in Persia in 1855, was educated in Buffalo, N. Y., and later returned to Persia, where he has since remained as a missionary physician. He built the first hospital in that country and at one time was the only foreign physician in a community of half a million people. He acquired great influence among the tribes and became prominet in political relations as well as in the medical field. For services rendered, the Shah of Persia conferred on him a decoration which had been bestowed only twice on others than Mohammedans. He taught many natives the principles of medicine and they will carry on his work. A year ago his colleague was murdered by a fanatic and it may be remembered that last October President Roosevelt demanded and received a large indemnity for this act.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, Aug. 23, 1905, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 30, scarlatina 5, typhoid fever 31, measles 9, tuberculosis 52, smallpox 0.

The death-rate of the reported deaths for the week ending Aug. 23, 1905, was 18.68.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, Aug. 19, 1905, was 226, against 217 the corresponding week of last year, showing an increase of 9 deaths, and making the death-rate for the week 18.76. Of this number 129 were males and 97 were females; 223 were white and 3 colored; 158 were born in the United States, 65 in foreign countries, and 3 unknown; 46 were of American parentage, 158 of foreign parentage, and 22 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 39 cases and 3 deaths; scarlatina, 5 cases and no death; typhoid fever, 30 cases and 3 deaths; measles, 9 cases and no deaths; tuberculosis, 51 cases and 24 deaths; smallpox, no cases and no deaths. The deaths from pneumonia were 13, whooping cough, 2, heart disease 17, bronchitis 4, and marasmus 5. There were 7 deaths from violent causes. The number of children who died under one year was 66; the number under five years, 93. The number of persons who died over sixty years of age was 45. The deaths in public institutions were 81.

There were two cases and two deaths reported from cerebrospinal meningitis during the week.

Librarian, Treadwell Library, Massachusetts General Hospital. — Dr. James J. Minot has been elected librarian of the Treadwell Library at the Massachusetts General Hospital in place of Dr. A. T. Cabot, who has resigned.

Boston Food Laboratory. — This week a food laboratory for the purpose of analyzing imports begins active work in Boston. Hereafter imports reaching this city will be subjected to scientific examination as provided for in the recently enacted pure food laws. New York and San Francisco have already adopted this method as protection against fraud and Philadelphia, Chicago and New Orleans are on the point of doing so. The work will require the service of more than one chemist and others will be obtained as soon as possible. Mr. Bernard H. Smith, who has been employed under Dr. Wiley in Washington, has organized the laboratory and will have general supervision of the work. By this means it is hoped that the adulteration of food will be very materially diminished.

NEW YORK.

Modern Prison Buildings. — A commission of five, to inquire into practical measures and methods for providing modern prison buildings in New York state, was appointed by Governor Higgins on Aug. 15, in accordance with an act passed in the latter part of the recent session of the legislature. The commission will investigate the structural and sanitary conditions of the buildings at Auburn and Sing Sing prisons, and report as to the advisability and cost of reconstructing and modernizing the buildings, or, on the other hand, secure estimates on the amounts which can be realized from the sale of the entire properties at Auburn and Sing Sing. It will also consider the advisability of constructing two new prison plants on new sites, and make a selection of the most advantageous locations for the same. In addition to these, which would presumably take the place of the old Auburn and Sing Sing prisons, the commission is to report on

the probable cost of one new prison to accommodate 2,400 inmates and the most suitable location for it. The chairman of this special commission is Cornelius V. Collins of Troy, who is at present superintendent of state prisons and a member of the State Commission of Prisons. In its most recent report the State Commission said of Sing Sing prison: "This immense cell-block of 1,200 cells was constructed some eighty years ago. The antiquated idea that a prison must be a dungeon then prevailed, and no change or improvement has been made in these cells during all the time which has since elapsed. Each of the twelve hundred cells is dark, small and narrow, without ventilation and without a closet — an utterly unfit place for human habitation. It is undoubtedly true that this prison is a hotbed for the culture and spread of tuberculosis."

Death of General Emmons Clark. — General Emmons Clark, the distinguished colonel of the Seventh Regiment for twenty-five years, who died on Aug. 9, was for thirty-five years the efficient secretary of the New York Board of Health. He was appointed to the position in 1866, when the present department was organized, and much regret was felt when, in 1901, he felt compelled to resign on account of failing health.

Ordinance Against Noise. — The Board of Health of Mount Vernon, Westchester County, of which Dr. Archibald McCampbell, is president, has just passed the following ordinance: "The ringing of church bells, or any other bells, the moving or shunting of trains, except in connection with the through traffic of the railroads, the handling or movement of large masses of rock, metals and other substances, so as to interrupt or disturb the sleep of the residents, will be prohibited in the city of Mount Vernon between the hours of ten o'clock in the evening and six o'clock in the morning. The maintenance of lowing animals, crowing cocks, barking dogs, and other birds or other animals which produce or are calculated to create noise, to disturb the sleep and quiet of the neighbors, within the same hours, is hereby prohibited." The owners of indiscreet fowls and of watchful dogs which might rashly bark to give warning of an approaching burglar will be subject to arrest and a fine of $50 to $100, while those failing to pay their fines will be sent to jail. Certain members of the bar, however, believe the ordinance to be unconstitutional and state that in its present form a conviction could not be secured under it.

Miscellany.

STATISTICS OF VENEREAL DISEASE.

It is notoriously difficult to obtain any trustworthy figures to show either the incidence or the mortality in any country of the venereal diseases. The Registrar-General's returns of mortality from syphilis cannot be relied on, for in but few cases of death ultimately due to this cause does the same appear on the death certificate. For instance, in Ireland, in the year 1903, out of 77,358 deaths registered, in only 104 is the cause given as syphilis, and in 14 as gonorrhea. The figures obviously bear no relation to the actual facts. With regard to the extent to which venereal diseases exist in the living population, it is just as difficult to form an estimate, and the estimates that have been made are more or less guesses depending on individual experiences. Sir William Gowers is reported to have given his opinion that there are half a million people in London alone who have contracted syphilis. There are said to be 150,000 syphilitics in Berlin, and 225,000 in New York, while in France one out of every seven people is said to have the disease. Figures based on admissions to the army can obviously not be taken as representative of the conditions of the general population, since in different countries the army is recruited from quite different classes of the population. Nevertheless, such figures are instructive, though they show a very wide variability, reaching the highest figures among British recruits and the lowest among German. Out of every 1,000 admitted to the following armies the rates for gonorrhea and syphilis were, respectively, Germany, 27 and 5.5; Russia, 36 and 13; France, 40 and 9; United States, 73 and 16.8, and Great Britain, 173 and 101. We still seem as far as ever from devising any practical means of preventing the spread of these diseases. — *Medical Press.*

DEATHS IN CHICAGO FROM NERVOUS DISEASE.

In view of the fact that it has been announced from Chicago that there has been a marked decrease in the deaths from diseases of the nervous system in that city during the past thirty years, Dr. Burke, of the statistical bureau of the Health Department, has looked up the figures for New York in the same period. It is claimed that in Chicago the number of deaths from nervous disorders fell off from a rate of 37.6 per 10,000 in 1870 to one of 12.8 in 1904. In the Boroughs of Manhattan and the Bronx (the old city of New York) the death-rate per 10,000 has been as follows: 1870, 34.72; 1880, 23.06; 1890, 19.91; 1900, 14.17; 1904, 19.83. In commenting on these statistics President Darlington of the Health Department stated that while the so-called diseases of the nervous system may be decreasing, Bright's disease and cardiac diseases are increasing, and that these affections are just

as much the result of mental strain and the pressure of modern life as any of the diseases commonly known as those of the nervous system. Dr. Darlington spoke of the effect which the marked decrease in the consumption of whiskey and other spirits, and the increased consumption of malt liquors, in recent years, has had upon the phases of disease, and went on to say: "But we cannot get away from the fact that the nervous strain in New York is increasing every day, and it is doing its work just as destructively as it did ten, twenty, or thirty years ago, notwithstanding what any group of figures may seem to indicate. Of course, it is largely a matter of classification of diseases. I do not know what particular ones Chicago may group under the head of diseases of the nervous system, but it is necessary to know that before making any comparative statistical study of the conditions in the two cities."

OBSERVATIONS ON HEART-BLOCK IN MAMMALS.

Dr. Joseph Erlanger, Associate in Physiology at the Johns Hopkins University, has recently reported in the *Johns Hopkins Hospital Bulletin* the following results of experimental work in relation to the Stokes-Adams symptom-complex:

Through the courtesy of Dr. Osler the author has had the opportunity of making observations on a case of Stokes-Adams disease in which the disturbances in the circulatory system obviously owed their origin to the condition now generally termed heart-block. The studies made of this case indicate that when the block is complete the auricles respond normally to influences exerted upon the heart through its extrinsic nerves; but the ventricular rate seems to be influenced neither by changes in posture, nor by atropin, nor by moderate muscular exercise. However, the ventricular rate may be increased by more severe muscular exercise. On the other hand, it could be shown that when the block is partial not alone the auricles but also the ventricles, the latter within certain limits, respond normally to extrinsic influences. The characteristic attacks of unconsciousness are always associated with a very marked slowing of the rate of the ventricle; the intervals between the beats may be twelve seconds. The slowing of the ventricular rate always precedes the cerebral symptoms by an appreciable interval. These observations led to an attempt to produce and to study heart-block in mammals by methods that do not involve destruction of all the tissue in a cross-section of the heart. After having made some preliminary and more or less successful attempts to produce heart-block in the dog, a simple and satisfactory method was devised of clamping the limited region in which lies the only muscular connection between the auricles and the ventricles, the auriculo-ventricular bundle of His. The method is not particularly difficult, and since it has been perfected the clamp has been successfully applied in every attempt. When the clamp has been put in the right place the heart will continue to beat with undisturbed rhythm. But when the arms of the clamp are cautiously screwed together, the normal sequence of the auricular and ventricular beats will more or less abruptly give way to a partial block in which the beats of the auricles are to the beats of the ventricles as 2: 1. With further clamping a 3-to-1 rhythm may be established and this, as a rule, passes into complete block in which the beats of the ventricle are totally independent of those of the auricle. The reverse order of changes is obtained when the clamp is unscrewed. As a rule the changes of rhythm occur at once, that is, without a preliminary stoppage of the ventricle. In two experiments upon tightening the clamp the normal sequence gave way to complete block without passing through the usual intermediate stages. In these instances at the moment the complete block was established the ventricular rate was markedly slowed and the blood-pressure fell to a very low level. Thus in one of the instances the interval between two ventricular contractions was twenty-one seconds. The ventricular rate and the blood-pressure then gradually increased until values usual for heart-block were reached. The exact cause of this phenomenon has not yet been determined. With each change in rhythm the blood-pressure is materially affected, falling when the ventricular rate is decreased and rising when the ventricular rate is increased. But even in complete block a fair pressure may be maintained. When the block is partial both the auricle and ventriclae may be inhibited by stimulation of the vagus nerve at least as easily as under normal conditions. But when the block is complete no diminution, or but very slight diminution, of the rate of the ventricle results from stimulation of the vagus. The auricles react normally to vagus stimulation. Section of both vagi has little or no influence upon the rate of the ventricle when the block is complete. Stimulation of the accelerator nerve as a rule increases the rate of the ventricle in complete block. The increase may be as great proportionally as that obtained under normal conditions. The reaction of the auricles to stimulation of the accelerator is not influenced by the block. The rate of the ventricle in complete block is not as a rule materially affected by variations in the blood-pressure produced, for example, by compression of the abdominal or thoracic aorta or by extreme hemorrhage. The plugging of one coronary artery, either the right or the left, by Porter's method, has not obviously altered the rate of the ventricle in complete block. In every case of failure to obtain block in the preliminary experiments it was found at autopsy that the ligature or clamp had not been placed so as to grasp the region of the auriculo-ventricular bundle. The analogies between the phenomena of heart-block in the dog and the signs and symptoms of Stokes-Adams disease are obvious, and we may therefore be justified in predicting that the location of the lesion will be found to be the same in both conditions.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, AUG 12, 1905.

CITIES.	Population Estimated, 1904.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from					
				Infectious diseases.	Acute lung diseases.	Diphtheria and croup.	Diarrheal Diseases.	Cerebro-spinal Menin-gitis.
New York . .	3,908,644	1,507	636	39.88	8.29	1.66	21.63	1.26
Chicago . . .	1,990,750	589	—	47.86	5.56	.74	37.10	—
Philadelphia	1,407,988	438	181	36.52	5.71	1.14	20.77	.45
St. Louis . .	633,606	—	—	—	—	—	—	—
Baltimore . .	543,229	210	105	33.33	4.28	.47	31.42	—
Cleveland . .	444,251	—	—	—	—	—	—	—
Buffalo . . .	400,645	—	—	—	—	—	—	—
Pittsburg . .	362,403	—	—	—	—	—	—	—
Cincinnati . .	338,377	—	—	—	—	—	—	—
Milwaukee . .	325,980	—	—	—	—	—	—	—
Washington .	300,776	—	—	—	—	—	—	—
Providence .	196,744	78	27	39.74	—	1.28	26.92	—
Boston . . .	617,950	236	98	41.52	5.50	.42	27.96	1.69
Worcester . .	138,925	59	17	33.33	3.56	—	33.33	—
Fall River . .	105,627*	65	—	67.67	1.54	—	55.96	—
Lowell . . .	104,402	40	19	30.00	7.50	—	17.50	—
Cambridge . .	100,996	28	15	28.57	7.14	—	17.85	—
Lynn	73,875	36	13	25.00	—	—	16.67	—
Lawrence . .	69,989*	28	15	53.56	7.14	—	46.42	3.57
Springfield .	72,020	21	9	42.85	4.76	—	28.57	—
Somerville .	70,413	18	5	38.88	—	—	27.77	—
New Bedford	68,963	32	27	33.33	—	1	30.95	—
Holyoke . . .	50,588	19	13	68.42	—	—	47.37	5.26
Brockton . .	47,782*	19	4	21.05	—	—	—	10.52
Haverhill . .	39,061	11	3	27.27	9.09	—	—	—
Newton . . .	39,310	6	2	33.33	—	—	—	—
Salem	37,600*	15	4	26.66	—	—	30.00	—
Malden . . .	37,960*	16	8	31.25	12.50	—	—	—
Chelsea . . .	36,499	17	11	—	—	—	—	—
Fitchburg . .	36,335	8	4	37.50	—	—	25.00	—
Taunton . . .	34,877	15	7	40.00	6.67	—	26.76	—
Everett . . .	30,960	13	5	7.69	7.69	—	—	—
North Adams	22,129*	9	3	11.11	—	—	—	—
Gloucester .	26,000*	—	—	—	—	—	—	—
Quincy . . .	25,798	8	3	37.50	—	—	25.00	—
Waltham . .	25,239*	11	4	27.27	—	—	9.09	—
Brookline . .	25,578	3	—	—	—	—	—	—
Pittsfield . .	25,000*	14	4	21.43	—	—	7.14	—
Chicopee . .	21,892	7	5	85.74	—	14.29	57.16	—
Medford . .	19,638*	5	1	20.00	—	—	—	—
Northampton	19,943*	5	4	80.00	—	—	80.00	—
Beverly . . .	15,223*	12	8	—	—	—	—	—
Clinton . . .	13,105*	7	4	57.16	—	—	42.87	—
Leominster . .	14,390*	2	1	—	—	—	—	—
Newburyport .	14,673*	7	4	42.87	—	—	42.87	—
Woburn . . .	14,215	3	3	—	—	—	—	—
Hyde Park . .	14,192*	8	4	12.50	—	—	—	12.50
Adams	13,402*	—	—	—	—	—	—	—
Attleboro . .	13,702*	—	—	—	—	—	—	—
Marlboro . .	14,073*	4	2	50.00	—	—	50.00	—
Melrose . . .	14,294*	1	—	—	—	—	—	—
Westfield . .	13,602*	3	2	—	—	—	—	—
Milford . . .	13,105*	—	—	—	—	—	—	—
Revere	12,847*	5	4	20.00	—	—	—	—
Framingham .	11,549*	—	—	—	—	—	—	—
Peabody . .	13,097*	—	—	—	—	—	—	—
Gardner . . .	11,981*	3	3	—	—	—	—	—
Weymouth . .	11,350	10	2	30.00	—	—	20.00	10.00
Southbridge .	11,716	2	—	—	50.00	—	—	—
Watertown . .	11,309*	3	2	—	—	—	—	—
Plymouth . .	11,118*	—	—	—	—	—	—	—

Population given of cities and towns marked * are from advance sheets of the Official Census of Massachusetts for 1905, and are subject to correction. All not thus reported are from population as estimated for 1904.

Deaths reported, 3,590; under five years of age, 1,281; principal infectious diseases (smallpox, measles, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 1,425; acute lung diseases 218, consumption 335, scarlet fever 2, whooping cough 30, cerebrospinal meningitis 31, smallpox 0, erysipelas 2, puerperal fever 16, measles 12, typhoid fever 64, diarrheal diseases 893, diphtheria and croup 40.

From whooping cough, New York 16, Chicago 4, Philadelphia 5, Boston 2, Fall River 2, Pittsfield 1. From scarlet fever, Chicago and Providence 1 each. From cerebrospinal meningitis, New York 19, Philadelphia 2, Boston 4, Brockton 2, Lawrence, Holyoke, Hyde Park and Weymouth, 1 each. From erysipelas, New York and Chicago, 1 each. From typhoid fever, New York 27, Chicago 8, Philadelphia 14, Baltimore 10, Providence 2, Boston, Lowell and Pittsfield 1 each.

In the seventy-six great towns of England and Wales, with an estimated population of 15,600,377, for the week ending Aug. 5, 1905, the death-rate was 17.0. Deaths reported 5,080; acute diseases of the respiratory organs (London) 42, whooping cough 77, diphtheria 44, measles 71, smallpox 1, scarlet fever 39.

The death-rate ranged from 6.0 in Kings Norton to 62.9 in Rhondda.* London 15.6, West Ham 22.8, Brighton 10.2, Southampton 11.8, Plymouth 17.1, Bristol 14.3, Birmingham 17.0, Leicester 12.8, Nottingham 17.8, Birkenhead 20.2, Liverpool 22.4, Wigan 23.5, Bolton 15.2, Manchester 21.5, Salford 18.7, Halifax 11.5, Bradford 16.5, Leeds 17.1, Hull 19.2, Sheffield 28.4, Newcastle-on-Tyne 16.6, Cardiff 10.4, Merthyr Tydfil 14.8, Burton-on-Trent 10.9, Bootle 24.1.

*79 deaths caused by mine explosion, otherwise the rate would have been 29.2.

METEOROLOGICAL RECORD.

For the week ending Aug 12, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

DATE	Barometer. Daily mean.	Thermometer. Daily mean.	Thermometer. Maximum.	Thermometer. Minimum.	Relative humidity. 8.00 A.M.	Relative humidity. 8.00 P.M.	Relative humidity. Daily mean.	Direction of wind. 8.00 A.M.	Direction of wind. 8.00 P.M.	Velocity of wind. 8.00 A.M.	Velocity of wind. 8.00 P.M.	We'th'r * 8.00 A.M.	We'th'r * 8.00 P.M.	Rainfall in inches.
S. . 6	29.91	69	74	64	99	69	84	N E	S W	2	10	G.	O.	.0
M. . 7	29.86	77	87	67	73	59	66	N W	W	8	5	F.	O.	.0
T. . 8	30.02	74	81	67	59	69	64	W	S W	7	6	O.	O.	.0
W. . 9	30.10	74	78	71	93	82	88	W	S W	4	3	O.	O.	.3
T. . 10	30.11	78	86	70	80	75	78	S W	S W	16	19	G.	C.	T
F. . 11	30.12	80	87	74	89	75	82	S W	W	12	8	O.	R.	.01
S. . 12	30.04	80	88	73	77	87	82	S W	S W	14	4	O.	O.	1.53
Mar	30.15		82	69			78							1.57

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. Mar Means for the week.

SOCIETY NOTICE.

AMERICAN PUBLIC HEALTH ASSOCIATION.—The thirty-third annual meeting of the American Public Health Association will be held in Boston, beginning Sept. 25, and continue five days.

RECENT DEATHS.

DR. CLARKSON C. SCHUYLER of Troy, N. Y., died at Plattsburgh in that state on August 16, of cirrhosis of the liver. He was fifty-five years of age, and for fourteen years was attending surgeon to the Troy Hospital. He was in the army medical service in the Spanish American war, and during the administration of Governor Flower was a member of the New York State Forest Commission.

DR. MARCELLUS H. PHELPS died in Hillsboro Bridge, N. H., August 21. He was born in 1845, attended the medical school of Maine and was finally graduated from the Dartmouth Medical School. He has been prominent both as a physician and as a citizen at Hillsboro and throughout the state since 1877. For many years he took an active part in politics.

BOOKS AND PAMPHLETS RECEIVED.

Gefässkrisen. Von Prof. Dr. J. Pal. Leipzig: S. Hirzel. 1905.

Twelfth Annual Report of the State Charities Aid Association to the State Commission in Lunacy. November 1, 1904.

Thirty-second Annual Report of the State Charities Aid Association to the State Board of Charities of the State of New York. November 1, 1904.

Albumin in the Urine of Apparently Healthy Children. Renal and Cardiovascular Changes in Children as Seen in Southern California. By William A. Edwards, M.D. Reprint.

Chloroform and Ether Anesthesia. With Report of Cases. By Charles T. Souther, M.D. Reprint.

Some Observations in the Treatment of Ophthalmia Neonatorum. With Case Reports. By Charles T. Souther, M.D. Reprint.

Bulletin of the State College of Kentucky, Lexington, Ky. From the Laboratory of Anatomy and Physiology. Development of the Bones of the Hand as Shown by the X-Ray Method. By J. W. Pryor, M.D. 1905.

A Text-Book on the Practice of Medicine. For Students and Practitioners. By James Magoffin French, A.M., M.D. Second Revised Edition. Illustrated. New York: William Wood & Co. 1905.

Original Articles.

STOKES-ADAMS SYNDROME.*

A REPORT OF TWO CASES WITH A SHORT RÉSUMÉ OF THE LITERATURE.

BY T. J. FOLEY, M.D., WORCESTER, MASS.,
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I HAVE been fortunate enough to meet with two striking examples of this peculiar group of symptoms and I take this opportunity to report them to you. I also include in this article a short résumé of the literature with the purpose of calling your attention to the variety of pathological conditions that may be found as a probable cause.

The disease is characterized by a vertigo, syncope, loss of consciousness and a slow pulse — a pseudoapoplexy. Riegel,[1] taking 60 as the normal pulse, found a total of 1,041 in 7,567 examinations where the pulse was below that, but of these, only 47 had disease of the organs of circulation. We have all perhaps run across people with permanent slow pulse, in whom it is apparently physiological or, as Mayo [2] says guardedly, is "compatible with either ordinary length of days, or, at all events, with the continuance of life for an indefinite period."

I knew a young man, always in fine health, whose pulse, as a rule, was 50 that rose to 60 at the beginning of an acute appendicitis and the sudden appearance of a pulse of 70 on the second day I felt was of grave significance, although his general condition had not apparently become any worse. He was at once transferred to the hospital, and an immediate operation disclosed a gangrenous appendix and free pus. He made a very slow recovery. R. T. Edes [3] mentions the fact that Napoleon's normal pulse was about 40 and comments on the strange attacks of depression and apathy that assailed him on more than one occasion. A possible connection between his slow pulse and epileptiform seizures is also suggested. Vigoroux [4] mentions a laborer whose pulse and heart beats were 20, who was capable of great exertion and was never sick. There are a number of such cases recorded but with these I will not concern myself in this paper. We have to do more with the pathological forms in which either clinically or anatomically have been demonstrated cardiac lesions, with or without atheroma of the aorta and coronary arteries, or, in rare instances, changes in the nervous system. We may say then that the Stokes-Adams syndrome may be either of nervous or cardiac origin.

One of the cases that came under my observation appeared at the Out-Patient Department of the City Hospital, Dec. 8, 1904. He was first seen by the house officer, who obtained this history from him: He was fifty-seven years of age and a wire worker by occupation. His wife became insane one year before and since then he has become very nervous. Previous to that time his personal history as far as sickness was concerned was very good. His present illness began about six months before, with attacks of vertigo, followed by pain in the chest and headache. The attacks were more noticeable on rising in the morning or when bending over. He thinks he sometimes became unconscious in these attacks. The pupils react well, tongue tremulous — protrudes in the median line, slightly coated. Pulse was 38, full and regular. Heart displaced toward the left. I saw him the following day. He was tall and poorly nourished. I found the cardiac area to be enlarged, the left heart one finger's breadth outside the nipple line; the right heart to the middle of the sternum. No thrill could be detected. There was a rather sharp first sound at the apex, followed by an exquisitely soft systolic murmur, the latter also being heard over the precordia. Both second sounds were weak but pure. The heart beat was perfectly synchronous with the pulse. When the patient assumed the horizontal position his pulse was 32, and on exercise went up to 44. His lungs showed signs of a moderate amount of emphysema. Liver and spleen were not enlarged. There was no edema. My anatomical diagnosis was myocardial degeneration resulting from sclerosis or calcification of the coronary arteries. There was probably also some degree of atheroma of the aorta. It is impossible in these cases to exclude the possibility of changes in the ganglia of the heart, also a result of the coronary changes, and further mention of such changes will be made later on. The systolic murmur I considered to be myocardial in origin. The left heart only was enlarged and there was no accentuation of the second pulmonic tone. I saw very little of the patient afterwards but I mention his case as furnishing the most common example of the disease. He was transferred to the house medical side for observation, and through the kindness of Dr. Thomas Howell I am able to give you some idea of the further history of this patient. He was kept in bed for a time and the house officer gave him for experimental and diagnostic purposes a short course of treatment with atropine, but it had no appreciable effect on his pulse. Rest in bed however seemed to relieve his vertigo, and he made no report of such attacks until Jan. 6, three weeks after his admission into the hospital. He had one slight feeling of dizziness that morning but it was not noticed by any of the hospital attendants. From this time on he was up and about the ward, having occasional attacks of vertigo but no periods of unconsciousness until Jan. 30, he was sitting in a wheel chair and without any complaint of pain of any description suddenly collapsed. The house officer was close at hand, the man was taken from the chair, laid on the floor, atropine and brandy injected subcutaneously and artificial respiration practiced. The patient gasped a few times and was dead. His highest recorded pulse was 52, and this was taken the day he went to the hospital, and it slowly declined until for the last few weeks before his death it varied from 20 to 30. He was never seen in any of his dizzy attacks and it is impossible to say whether he had at any time a much slower pulse. His urine was always cloudy, acid, of a high specific gravity and contained neither sugar, albumin, or casts.

It is interesting here to notice the effect of the atropine and the use it may have for diagnostic purposes. According to Dehio [5] atropine is known to paralyze the inhibitory functions of the vagus from one end to the other. If atropine is given in a case where an intracranial lesion irritates the vagus the pulse quickens, while in cases of permanent slow pulse there is a slight result if any at all.

My other patient was a young man nineteen years of age, a machinist by occupation. His family history is of little interest. His father died of an abdominal tumor at fifty-seven years of age, a sister died of what was called "salt rheum," and a brother died of pul-

* Read before the Worcester District Medical Society, April 13, 1905.

monary tuberculosis. His mother and two brothers are alive and well. He is supposed to have had brain fever when eight years of age. He was a well-developed and well-nourished young man and had been in excellent health. On Jan. 13, 1901, he was taken with "sore throat" and when I saw him on the following evening there was considerable membrane on both tonsils. He complained of much pain and the cervical glands were enlarged. Temperature 103.2; pulse 118; it was a nasty-looking throat and, without waiting for a report from the culture, I at once gave 3,000 units of antitoxin; the following morning there was some improvement, temperature 101; pulse 100; culture was reported negative. Jan. 16, the temperature and pulse were normal and the second culture was reported negative. A third culture was taken Jan. 17, and was reported positive. By this time the membrane had entirely disappeared from the throat and the patient was up and about the house. I found it impossible to control him and made no attempt to do so after the fourth and final culture was taken. From the time shortly after my last visit until April 23, about three months, he had felt pretty well, although at no time as well as before his sickness. He worked steadily however. On the evening of this last date he made some complaint of pain in the stomach; when he got up on the following morning he felt well, but while putting on his shoes he suddenly pitched forward on the floor; he did not lose consciousness and soon revived. At this time he experienced severe pain in his head and chest. This was soon followed by a sinking feeling and he thought he was going to die. When I saw him, about an hour after his first attack, he was very pale, was sweating profusely and felt nauseated. He thought he would feel better if he could vomit and tried to induce vomiting by putting his finger back in his throat. He was nervous and uncomfortable, and, against my protest, got up out of bed and sat on a vessel; in a few moments he suddenly pitched forward on the floor. His body assumed the position of opisthotonos but the movement remained tonic in character, the respiration ceased and the face became ghastly pale at first, gradually changing to a cyanotic hue as the rigidity increased in intensity. He looked as though he was about to die. Finally, after an interval of twenty to thirty seconds, the muscles began to relax, respirations began, at first spasmodically, then a few deep breaths and consciousness returned. After being placed in bed his pulse was 16, the heart was found to be enlarged, the left heart reaching one finger's breadth outside the nipple line and the right heart to the right edge of the sternum. At the apex the first sound was sharply accentuated, valvular in quality and split; the other cardiac sounds were feeble but pure, there was no murmur, but occasionally a sound not synchronous with the pulse beat was heard. Unfortunately no examination was made of the veins of the neck and I could not say whether these intermediate beats were auricular or not. Edes mentions Chauveau and also Vaques and Bureau as authorities, who say that the small intermediate beats which could be seen in the cardiogram and synchronously with this in the jugular pulsations were referable to the auricular contractions which were not communicated to the ventricles, and this condition of things was compared to what is found when the vagus of the horse is weakly stimulated — that is the inhibition of the ventricular contractions, while the auricular are but little affected. My patient had seven attacks during the day but finally, under the influence of morphia and strychnia, he gradually improved until after his last attack, when his pulse was 24, there was a gradual rise to 40 the next morning. He was kept under observation for one week; the pulse was never higher than 42, always irregular in rhythm and quality. Temperature was always slightly subnormal. Urine, acid, specific gravity 1,018, contained no sugar, albumin, or casts. One month afterwards I met him on the street and he was hurrying along at a rapid rate. He had another attack June 19, 1903, in which he did not lose consciousness and when I saw him his pulse varied from 30 to 36. He was fairly comfortable, however, did not suffer any pain and after a week's rest in bed was allowed to get up again. The cardiac area was smaller than it was two years before. I have lately examined this patient. His heart area is normal, pulse varies between 80 to 90, while the heart sounds are perfectly normal.

F. W. White and H. A. Smith [6] have made a study of heart changes in nearly one thousand cases of diphtheria and tell us that murmurs, rapid and irregular pulse are common. The majority of the murmurs, which were usually systolic and were heard best at the apex, were accompanied by an accentuated second pulmonic tone and irregular heart action that outlasted the fever. They reported 3 cases of bradycardia occurring usually at the end of the second week or the beginning of the third week. The pulse ranged at that time from 20 to 30 and in all cases a fatal ending resulted. Not any of the three patients showed any typical symptoms of Stokes-Adams disease except the bradycardia. In the discussion that followed Dr. McCollom said he considered the majority of the heart symptoms to be due to a change in the pneumogastric nerve. I have never to my knowledge seen a case of diphtheria at an autopsy where endocardial changes have taken place. Gibson [7] refers to the frequency of endocarditis during the acute infectious diseases. Out of 670 cases in the Leipzig Clinic, Romberg [8] says 58.5% were rheumatic, 12.3% arteriosclerotic, 3% were due to chorea, smallpox and gonorrhea, while less than .3% were due to scarlet fever, diphtheria and septicemia. Baginsky [9] in his fine work on diphtheria says the disease can cause almost any anatomical lesion of the heart. Most of the changes however are myocardial, consisting of a fatty degeneration of the muscle fibers, a great increase in round cells in the interstitial tissue and well marked changes in the muscle nuclei. Romberg [10] also gives a prominent place to diphtheria as a cause of myocarditis. He says the latter disease is almost always brought about by infectious diseases. He thinks, however, that coronary sclerosis as a cause of the chronic inflammation of the heart muscle has not been given the attention it deserves. These heart degenerations are in general more difficult to diagnose clinically from endocardial disease. Many cases of diphtheria myocarditis are accompanied by a systolic murmur with an accentuated second pulmonic tone, but Baginsky explains them as being an expression of an inexactly placed mitral valve, or damage to the papillary muscle brings about an insufficiency of the mitral valve. The further history of the case is usually enough to differentiate the two conditions, but it is a difficult matter to explain why a myocarditis is accompanied in one case by a rapid pulse and in another

by a slow pulse. Baginsky divides the heart paralysis very conveniently into the *early paralysis*, those cases in which the paralysis occurs while the local symptoms are present, and the *late paralysis*, where the heart as well as the other organs gives way to the steady progressive effects of the diphtheria poison. In the former class he makes no mention of a slow pulse but in the latter he makes note of a number of cases where the pulse was recorded 36 to 40. In the great majority of cases he thinks the myocarditis present is enough to account for the heart paralysis, but it is not true in all cases, since he has been able to convince himself by frequent examinations that many of the early deaths occur without any noticeable change in the heart muscle; the more protracted the case, the greater the anatomical lesions, and it is to the muscle degenerations that those cases belong which resist death most successfully. My own case was given good-sized doses of morphine and atropine without any noticeable effect on the pulse, and if it is true that the atropine test has diagnostic significance, I feel that I had to do with the myocarditis and that there was little of any change in the vagus. Adams' original case in 1827 was sixty-eight years old, while Stokes' [11] two cases, that led to his famous monograph on slow pulse, were fifty and sixty-eight. His description of these cases makes interesting and instructive reading to-day. In these early cases fatty changes in the heart were prominent, but it was Huchard [12] who brought the symptoms to notice again in 1893, who was strongly of the opinion that the nervous system took some part in the process, arterio-sclerotic in nature, influencing the brain and especially the medulla. Hans Luce [13] of Hamburg has in the *Archiv für Klinische Medicin* a very thorough clinical and anatomical description of a case together with an interesting résumé of some of the literature of the disease. He thinks the occurrence in heart cases (mostly of old individuals) of bradycardia breathing anomalies and loss of consciousness confines the disease within too narrow limits, that a number of variations are necessary to fill out a complete picture. Bradycardia is the most important symptom and about this symptom is grouped others. According to his perusal of literature, he considers the following the most important: Bradycardia with simple weakness or fainting — bradycardia with apnea or with Cheyne-Stokes breathing or with irregularity of breathing — bradycardia with dizziness or headache — bradycardia with angina pectoris or cardiac asthma — bradycardia with apoplectic attacks or temporary hemiplegia (occurring, as one case shows, without anatomical findings) — bradycardia with apoplectic attacks, epileptic seizures, with mydriasis, loss of pupil reflex and breathing anomalies. Huchard's "*formes frustus*" is a bradycardia with simple weakness or with attacks of precordial distress with irregularity of the heart, or attacks of extreme paleness which are combined with dizziness, with alterations of sensibility, and a high degree of general weakness. Most cases are found in old individuals, as they were in the original cases of Stokes and Adams, the anatomical lesions being sclerosis, calcification, atheroma of the aorta and of the coronary arteries together. Lipomatosis of the heart muscle is frequent. But a number of cases proves that it may occur at all ages, with different heart lesions. Von Schuster's [14] little patient, a girl four years, was born healthy and remained so until an attack of rheumatic fever, when she later developed symptoms of myocarditis, and after passing through some severe attacks of Stokes-Adams disease, lasting for many months, finally recovered. Hoffman's patient was a girl twenty-three years of age, who had scarlet fever, diphtheria, typhoid fever and recurring attacks of chlorosis in her history; she also recovered. Hoffman controlled his pulse finding by the x-ray. The course of the disease is very various — it may be extremely fulminating, especially in old people, the attacks coming suddenly, death taking place after a few hours or days; other patients may experience a number of attacks, the end coming as the attacks increase in rapidity; there are other cases, such as Hoffman's and Von Schuster's, where the attacks come suddenly, persist for weeks and months and disappear as suddenly as they came leaving no trace of their former presence. Attacks may come on after longer or shorter periods, sudden death finally taking place in a recurring attack. It is said that during an attack the pulse undergoes many changes, the bradycardia may become exaggerated, or the pulse quality becomes small, irregular, unequal or interrupted for the fraction of a minute or even for several minutes. Attention has been called to the disorders of the nervous system as cause of this disease and in looking over the literature a striking example of this form of the disease was found. Krause has also described a case with all the appearance of Stokes-Adams syndrome that occurred during an attack of uremia pathology. Adams' case was a lipomatosis cordis with atrophy and fatty degeneration of the heart muscle. Korcziniski [15] observed a woman thirty-eight years of age with mitral stenosis and aortic insufficiency who suddenly suffered a stenocardial attack, pulse 24, became unconscious, with mydriasis and spasms, died; autopsy — embolus of one coronary artery. Hammer [17] saw a case in 1878 that collapsed; thirty hours before death had a pulse of 8; autopsy — a vegetation of the aortic valve obstructed the left coronary artery causing a thrombus formation. Samuelson,[18] treated a man forty-seven years of age who in his thirtieth year, during an inunction cure, experienced three times attacks which consisted in sudden loss of consciousness, slight delirium, dyspnea and clonic contractions of the face which lasted one half hour. During the following year this patient suffered frequent attacks of angina pectoris and cardiac asthma. During all this time there was nothing striking about his pulse; on the day of his death, after a hearty meal, he

experienced a severe stenocardial attack,— pulse 35,— became unconscious and died. Autopsy — an enormous sclerosis of the coronary artery with a high degree of narrowing of its lumen, directly after it left the aorta, with endarteritis obliterans in the further course of the artery. There were also isolated spots of scar formation and interstitial lipomatosis. Van Frey's [19] patient, sixty years of age, had a number of attacks in four years. Autopsy — slight dilatation of the left ventricle, lipomatosis cordis with fatty degeneration and narrowing of the coronary arteries and considerable atheromatous deposits; hydrocephalus internus and externus. In all these cases no microscopical examination of the nervous system was made. The changes in the nervous system causing this disease are usually located in the pons, medulla, upper cervical cord and peripheral vagus branches. Hoberton found at the autopsy of a man sixty-four years of age, in whom, three years after a fall from a horse, Stokes-Adams syndrome had set in, a narrowing of the occipital foramen, a thickening of the vagus and swelling of the upper cervical ganglion. Lepine found in a case a compression of the pons medulla from a jutting forward of the apophysis. Boyd described a case with syphilitic new formation on the floor of the fourth ventricle with 14 to 24 pulse which occasionally ceased for fifteen seconds; in none of these cases was an examination of the medulla made. A classical observation of the neurogenous Stokes-Adams symptom complex both from a clinical as well as an anatomical standpoint was furnished by Neuberger and Edinger [20]. A man, forty-six years of age, was being treated for chronic constipation and neurasthenia. During and after defecation he began to have fainting spells; pulse small, seldom over 60, became weaker during the attacks; heart had no signs of organic lesions. Nine days before death he had a severe attack. Mydriasis, loss of pupil reflex, head and eyes turned to the left, pulse good and strong, 18. Pulse ceased at times during the attack, gradually returned and in the evening was 60 to 70. Attacks almost continuous a few days before death; pulse 12 to 16, with stimulants, 30 to 40. Autopsy — heart perfectly normal; almost total loss of right half of cerebellum. The most important finding was in the cervical cord. The capillaries of the gray substance about the central canal were filled with blood; it was further found in other sections in the neighborhood of the pyramidal crossing in the posterior horn between the base of it and the substantia gelatinosi Rolandii a large varix passing into a strongly filled venous plexus; the varix was the size of a hempseed. There was beginning hemorrhagic infarction of the tissue between. Its position was such that pressure was exerted on the upper bundle of the nervous accessorious Willisii and thence to the neighboring nuclei. It is easy to imagine how straining at stool was enough to bring about irritation of the inhibitory fibers of the vagus. This case proves, first, that in man the inhibitory fibers of the vagus arise from the nervous accessorious, and, second, the Stokes-Adams symptom complex can be brought about solely by causes centrally operating in the medulla. Zurhelle [21] speaks of a case where swollen bronchial and mediastinal glands were the exciting factors. Recovery took place with hoarseness and paralysis of the recurrens. Luce's [22] patient was a man fifty years of age; in his twenty-second year he had a hard cancer and in his twenty-fifth year a skin eruption which disappeared under treatment. On examination he was found to be strikingly pale, pulse 28, cardiac area normal, loud systolic murmur, heard best over base and right of sternum, second sounds difficult to hear, slight liver enlargement, urine free from sugar or albumin, otherwise apparently normal. After admission to the hospital he had several attacks of unconsciousness, pulse slower, sometimes ceasing completely, irregular and of equal intensity; attacks lasted from one to two minutes. Several days after admission to the hospital, after a day of freedom from the attacks, he suddenly had repeated seizures and died. Autopsy showed adhesions between right lung and costal pleura. But the interesting conditions were in the heart. The subparicardial fat in the entire anterior surface of the right ventricle strongly developed, in the posterior surface of the left ventricle only in the course of the vessels. Heart was a trifle enlarged. Below and to the right of the exit of the pulmonary artery on the anterior surface of the right ventricle was a tumor about the size of a walnut and lying below the epicard. A second smaller tumor was seen close by in the space between the origin of the aorta and the pulmonary arteries, in fact at the base of these vessels. Above and closely intimate with this tumor was another large tumor having its origin in the anterior and right wall of the aorta where the right auricle is accustomed to come in contact with the artery. On opening the heart a tumor was found projecting into both ventricles and finding its origin in the upper third of the ventricular septum. The tumor springing from the aorta was an aneurism. All the valves were found to be healthy. The beginning portion of both coronary arteries were completely free and no intima changes that might cause narrowing or deformity could be demonstrated. There were no enlargements or metastases in glands. Microscopical examination showed the heart tumors to be round-celled sarcomata. The kidneys showed a well-marked venous stasis and a fresh parenchymatous nephritis. We have here in the heart, produced a real heart stenosis, a pathological-anatomical rarity. It is curious that in spite of its origin and its intimate association with the blood stream there were no anastomoses outside the heart. There were others beside these mentioned in the heart but mostly of microscopical size. Very striking was the severe partial parenchymatous degeneration of both vagus nerves going from the upper thoracic aperture to its entrance into the medulla. The intramedullary motor and sensory vagus roots were

intact. The same was true of the extra and intramedullary root fibers of the nervus accessorius Willisii. The vagus accessorius nuclei showed no histological change. No changes either could be made out in the peripheral vago-accessory fibers. The condition here is the so-called retrograde or secondary degeneration brought about by the tumor in the ventricular septum. Luce tells us that this case has furnished us with important anatomical information. Up to this time the intracardial course of the vagus accessory nerves in the heart of man was unknown. Embryological studies showed us they ended in the auricles in numerous ganglia and by further development spread to the auricular septum in the neighborhood of the foramen ovale. They, apparently, had no connection with the ventricles. Luce insists that the peculiar degeneration of the vagus fibers proves that the course of the greater portion of the intracardial vagus fibers is through the ventricular septum. Ganglion cells are wanting in the ventricles and according to his theory the vagus fibers influence the heart muscle fibers directly and not through the medium of ganglionic cells. This is a point of academic interest since physiological experiment has not succeeded in clearing it up. Neither can the vagus be the trophic nerve of the heart since this heart, in spite of the long history of the case (two years) was trophically normal and examination showed not the slightest sign of fatty degeneration. The physical examination of this patient gave a heart that was not enlarged, the impulse at the apex was weak and there was no thrill to be felt. Over all the heart area was heard a loud systolic murmur, heard best at the base or to the right side of the sternum. Aortic and pulmonary stenosis were excluded by the absence of hypertrophy or dilatation of left or right ventricles, absence of stasis, and the good full pulse. It is certainly remarkable in this case how regulation and compensation of the circulation were carried on. Luce suggests that the bradycardia is a toxic myasthenia of the heart muscle caused by the sarcoma and toxic products resulting from it. He cites cases of sarcoma of different organs that were accompanied by Stokes-Adams symptoms during life. As far as the nervous symptoms of Stokes-Adams are concerned individual disposition of the nervous system is of importance (Luce). Individual tolerance of different organs varies within wide limits. Japanese physicians report that the coolie because of his great exertions has a breathing center that is difficult to influence. They endure pneumonia, even with extensive involvement of the lung, with comparatively little dyspnea. The same is true of divers.

Naunyn [28] was able in three patients above fifty years of age by digital compression of the carotid at the throat to produce bradycardia, loss of consciousness, interruption of breathing and sometimes severe twitching of the extremities. This he was unable to do with younger patients. The diversity of the nervous symptoms of Stokes-Adams symptom complex may be considered as an expression of an individual nervous disposition which can be hereditary, or acquired through the presence of pathological conditions (such as arterio-sclerosis and chronic blood-vessel disturbances of any kind). This latter may explain why in one case convulsions are present, why they fail in another.

A case of acute dilatation due to exertion was reported by Strübing [34] of a boy who, after a hard run, fainted and afterwards had attacks of loss of consciousness and convulsions. He later had attacks with vertigo and headache. Pulse 16 to 18. He died in a paroxysm. No autopsy. A case was reported as caused by heavy lifting. Mental and emotional strain have been mentioned as causal factors but I have seen no case reported. The prognosis has been touched upon. It rests entirely on the study of the individual case — the condition of the heart, the severity of the symptoms and the condition of the pulse during the paroxysms would give the most important results (Edes).

The treatment consists in rest; diet, tonics and regulation of exercise are sometimes important. Some of the older patients may live for years but they must guard themselves against bodily or mental worry. This is especially true of the coronary cases. John Hunter, the great pathologist, was a victim of coronary sclerosis and suffered from stenocardial attacks. His statement "that his life lay in the hands of any rascal who chose to tease or annoy him" shows how precarious is such a patient's hold on life and how finely adjusted is the balance between the inhibitory and the augmentor fibers. In the developed paroxysms, the cardiac stimulants, like ammonia and the nitrates, are useful. Atropin may be given subcutaneously. The recumbent posture favors the return of blood to the brain. One patient often prevented an attack by getting on his hands and knees and allowing the head to hang down. Cases are known where rest and good feeding caused disappearance of attacks but without any change of the pulse.

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ULCER AND CANCER OF THE STOMACH: THEIR RELATIONSHIP.

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IT is not the purpose of this paper to consider critically the statistics submitted by the many writers on these two stomach lesions. This has been done, often and carefully, and we could add little that would emphasize the importance of a careful study of selected statistics by again entering the field. It cannot be a matter of doubt that these several writers are in earnest and working in accord with studied convictions, so we have no right to endeavor to set aside the evidence thus presented save through presentation of data founded upon actual, clinical, pathological and surgical experience. It is the purpose here to present as accurately as possible statistics of the last four years' work done at St. Mary's Hospital, and to offer conclusions drawn from the office clinic, backed by the surgical evidence.

There is a small but growing number of clinicians who believe that cancer of the stomach is often engrafted upon ulcer, and that the precancerous history, whether long or short, is but the history of ulcer, or, perhaps better stated, the precancerous condition whether manifest for a longer or shorter time is but the condition of ulcer or associated lesion.

None yet claim that all carcinomata of the stomach are implanted on a previous ulcer base, but the belief that it is the chief etiological factor is daily gaining ground, and more rapidly since post-mortem conclusions are being enlightened by early surgical operations and carefully developed clinical histories.

When we speak of the pyloric end of the stomach we may include more than is usually understood. It is the lesion-bearing area and includes that part of the stomach which has the beginning of the horizontal portion of the lesser curvature as its upper left limit. From the pyloric ring to this point is from 2½ to 3½ inches. Along the greater curvature the corresponding point would be 3½ to 4½ inches from the pyloric ring. A line joining these two points would have to the right of it the great ulcer and cancer-bearing area. This pyloric end, then, is what we mean when speaking generally of pyloric lesions. When we attempt to place lesions of the stomach at specific locations — and especially is this true of cancer — our statistics can betrue only within rather generous limits. This, we believe, is true of all statistics of the stomach, no matter how conscientiously sought and tabulated. What one formulates is not absolutely exact — only approximately so. A truth is taught that is always subject to some modification. This is all we claim here. We have endeavored to be somewhat specific as to lesion-location, more for purposes of comparison than because it teaches more clearly the pathological condition.

In our clinic about 75% of the ulcer cases that came to operation, the lesion was practically at the pylorus, about 20% make up those situated at both the pylorus and lesser curvature, and includes those at the posterior wall, and also those at the lesser curvature only. All were in the pyloric end. In something more than 3% gastroenterostomy was done and the ulcer not located. There was a little better than 1% hourglass stomach, and 1% cardiac. Most of these patients gave the history usually found in ulcer — pain, distress, gas, vomiting, belching, sour eructations, heartburn, acid stomach, emaciation, constipation, and hemorrhage. One or more of these symptoms were necessary to make the diagnosis. Most of them gave histories varying from one to thirty years, oftenest three to eight. A certain but small per cent gave short histories, with bleeding, perforation or obstruction as the first intimation of disease.

Of the cancer cases that came to operation, 34+% was located at the pylorus, 24+% was pyloric and lesser curvature both, and includes those at the lesser curvature near the pylorus. In about 6% where gastroenterostomy was performed the situation of the lesion was not noted but had to occupy the pyloric end if the operation was to benefit. In about 24% an exploratory incision was made and the location of the cancer not determined, or not stated, yet the greater number of these gave histories which pointed to more or less pyloric invasion at one time or another, and the possible chance to give relief either by pylorectomy or gastro-enterostomy was what prompted operation. A little less than 12% was recorded as cardiac. This points rather distinctly, then, that both ulcers and cancers are most numerous at the pyloric end of the stomach, and that they run very closely as to per cent in both, and are located at similar positions. The great discrepancy is found at the cardia, but cardiac cancers so called are often esophageal and extend toward the stomach. As operation promises little except to prolong life by gastrostomy, one seldom demonstrates whether the cancer is primarily esophageal with extension toward the stomach, or primarily gastric with extension to and obstruction of cardia. However, the greatest number by far is of an esophageal character and remains so. This we believe is the error (at any rate in our tabulation of cardiac cancers) that places cancer of the cardiac so much in advance of ulcer of the same region. The carcinomatous lesion apparently begins at the point where ulcer of the esophagus is most common, as demonstrated by cauterization due to the swallowing of lyes. Again, cancer of the cardia offers little difficulty of demonstration, while ulcer is difficult except at post mortem. What, then, do histories and post mortem show? In 1901, 72 per cent of the cancer cases gave a precancerous history of more than two years. In 1902, 70% gave a history so long that a preulcerous stage could scarcely be questioned, and in two recorded cases cancer was demonstrated on an old ulcer base.

In 1903, 50% of the patients operated upon gave a long precancerous history, and over 15% of the whole number showed cancer on ulcer and all with short histories, less than one year, while one covered a period of less than six weeks. Then in 1903 there was more than 65% of patients who either presented histories long enough to exclude cancer as primary, or who gave short histories, and cancer was demonstrated on ulcer base. In 1904 the long precancerous history was found in only 28%. During this year 18% of the cases showed cancer engrafted on ulcer, with about one half of this number giving a short precancerous history, *i. e.*, less than two years, or perhaps it would be more accurate to say, a latent ulcer history, the symptoms appearing as the degeneration to cancer progressed. From Jan. 1, 1905, to May 9, 1905, 28% of cancer cases operated upon shows ulcer as the primary lesion, with one questionable case not here counted. The average for the four years gives about 60% of cancer of the stomach with a preceding ulcer history or with ulcer base and engrafted cancer demonstrable.

It will be seen from the above statistics that the long precancerous histories have fallen off to quite an extent, for which we do not offer an explanation. However this may be, the more careful examinations, both macroscopical and microscopical, are abounding in proof that is incontrovertible, that ulcer and its allied lesions as a factor in etiology of gastric cancer cannot be lightly considered — yes, even more, that ulcer is the great factor as a precursor of cancer. It also teaches that the surgeon must watch carefully his operated cases to determine what procedure is best when he meets ulcer, whether excision is necessary to avoid future degeneration, or whether, by an early gastroenterostomy or other operation, he may promote cure of the ulcerous condition, and thus reduce to a minimum the dangers of malignant change.

Here it might be interesting to compare statistics most often quoted with what we have found. Brinton's statistics of 1857 give practically as the location of ulcers of the stomach 81% at or near the pylorus; of cancers, 76% at the pylorus. Welch, in "Pepper's System of Medicine," 1885, gives ulcers at or near the pylorus, 77.9%, and of cancers at the same location, 77.4%. It will be noted all in the pyloric end. At St. Mary's clinic, fully 85% of ulcers *and more* than 76% of cancers have been similarly located. This can hardly be coincidence. The discrepancy of location in ulcer and cancer as given by Welch can be easily explained. His statistics are chiefly based on post-mortem findings. The lesser curvature stands first as to the number of ulcers, and the pylorus third. In cancer the pylorus ranks first. A cancer when it has become active, whether on the posterior wall or lesser curvature, most often follows the course of the lymphatics, and thus travels towards the pylorus. It may retrograde but the more rapid growth is with the lymphatics, hence in late operations or at post-mortem the pylorus is found involved, and then the most active seat of cancerous change is the pylorus, and naturally it comes first in statistics based on autopsies (or late operation). Statistics based on early operation will, we are sure, bear out our premise. Again, it is argued that short histories are found in all but a small proportion of cancer cases, hence a preceding ulcerous condition is not causative. Let us grant this in a measure and follow out findings. First, in 3 to 5% of all persons coming to autopsy an ulcerous lesion is found which was either symptomless or the diagnosis not made. Second, what surgeon of only ordinary experience has not been called upon to operate on a case of perforation, hemorrhage, or acute obstruction of the pylorus, and finds himself unable to elicit even a premonition of the symptoms previous to these he has been called upon to abate? Has he not often found lesions that were more than recent? Brunner in 600 cases found that 90% perforated through old lesions. Third, has not this same surgeon been called upon to operate upon a carcinomatous stomach with symptoms of but a month's duration where obstruction is near complete, and found widespread trouble at the lesser curvature and pylorus of questionable age at least? Fourth, cancer developing on an ulcer base is often demonstrated and at times a very short or no real precancerous history.

In our clinic, of the ulcer patients that came to operation, the proportion was 1 to 1.18 in favor of the greater number of females, while in cancer there were nearly two males to one female. Strümpel finds difference in sex of no consequence in either ulcer or cancer, and Riegel draws practically the same conclusions. Perhaps what Strümpel says is quite nearly the truth, that is, that slightly more young females than young males have ulcer, while as age increases the reverse is true. Certainly so far as abuse of the stomach is concerned man can truthfully plead to more guilt, and this may be a factor in causation and continuation of these lesions.

If we argue from analogy, let us consider the uterus. Here trauma and ulcerous lesions and erosions are common during the child-bearing period, and as age advances these conditions decrease, while cancer increases, and it would seem that these similar lesions here are the great precursor of cancer. The same seems true of carcinoma of the lip. Women are rarely attacked by carcinoma of this region and as rarely do we find cause. In men irritation often starts early, ulcer later appears, and as time advances cancer may and does often follow.

Surgical statistics and post-mortem findings do answer the question as to location of the stomach lesions and agree perfectly, if we only translate the seeming differences properly, but late operation and post-mortem findings can have but little weight in answering the question as to what is the precancerous condition, as all preulcerous signs would be lost in the cancerous degeneration, in most cases at least, quite before fatal issue.

Our clinical experience teaches (1) that the very great majority of ulcers of the stomach are

located at the pyloric end. The immediate pylorus comes first, the lesser curvature second. A small per cent. is found elsewhere, few at the cardia. (2) The great per cent. of cancers of the stomach is found at the pylorus and lesser curvature (pyloric end), that is, the same locations find the greatest number of each. (3) Quite a per cent. (50–60) of patients suffering from carcinoma gives three or more years of a precancerous history. (4) A growing per cent. of cancer cases are found with short histories and ulcer demonstrated as the earlier lesion. (5) A certain per cent., if small, of short ulcer histories leading to acute pyloric obstruction where the ulcer must have been present for quite a period, and latent. (6) Ulcers may be present for an indefinite period and no symptoms follow until obstruction, perforation and hemorrhage appear, if the acidity is low or absent and the ulcer locates itself along the lesser curvature or near the pylorus. (7) Cancers may develop under the same gastric conditions and only manifest themselves when obstruction or systemic poisoning makes itself felt.

In conclusion, we would suggest that what is most needed to-day to settle these disputed points is better and earlier diagnoses in both ulcer and cancer of the stomach, so that the non-medical cases may be reached by the surgeon at the time when promises for life are greatest and when the pathological condition is easiest to demonstrate. It is not surgical technic that we need so much, it is the acutal bedside diagnosis that is still far from ideal.

A STUDY IN ABNORMAL PSYCHOLOGY.

BY GEORGE M. PARKER, M.D., NEW YORK, N. Y.

At certain rare occasions it is given one to hear of a case which, from the lips of the narrator, holds promise of possible classicism. Far more rarely, however, does one come actually to meet this usually elusive case and develop into a reality that which had merely been an entertaining conversational bit or a rambling discursive narrative.

The story with which this case is prefaced was given by the mother in an evening after dinner. It was told simply, descriptively and connectedly. The interpretative value of the history as it thus stood I have made to anticipate the actual analysis which followed upon later examinations, that it might possess something of immediate coherency and a semblance of form to the eye and understanding. The analysis itself rests upon a series of examinations and procedures directed towards an understanding of the psychological basis of the abnormal state. The case, as it stands complete, touches in many points similar abnormal phenomena described by Janet, Freud, Sidis, White, Prince, Putnam, and others to which reference should be made for analogical reading.

I. Some eighteen months ago, the narrator's daughter, a girl of nineteen years, left home for school. She was ambitious, over-anxious to compress the work of two years into the compass of one. Within three months a gradual declination became apparent; she appeared anemic, weaker, less able to work. Her fatigue became marked, her ambition lessened, her restlessness and irritability greater. It was overwork, quantitatively and qualitatively. Despite this, her school year was completed with honors. She then returned to her home. This lay upon the edge of a large railroad center. It was so situated as to be cut off from the main portion of the town by one of the numerous lines therein converging. This line the house directly overlooked. In the house two other families lived, both of whom bore, in the succeeding events, an important part. Beside the father and mother, the patient had a brother, a rather wild, reckless boy. In the next apartment were a brother and sister exceedingly intimate with our family. The upper apartment was tenanted by a woman of a light and gossipy order of mind.

On the morning in question the mother and daughter were in the dining-room, that part of the house which commanded the railroad tracks. The brother and the boy friend had left for town. Shortly after there was seen from the dining-room windows a crowd collecting at the tracks. While always fearful of an accident, yet nothing personal was felt, as both the boys were sufficiently aware of the danger to safeguard themselves. In a moment, however, the individual from the third floor burst into the room, screaming that the brother was killed, that his head had been cut off.

At this moment the patient had been reading. She made no sound but became white, dropped the book and seemed about to faint. Her condition called the mother to her. In a brief space of time word again came that it was not the brother but the boy friend who had lost his life. This soon was verified by the appearance of the brother.

The girl seemed to rally, but her condition had become noticeably strange; she laughed, spoke rather excitedly, was very restless, seemed not to do her work about the house in an intelligent manner. From time to time the horror of it seemed to oppress her, the extreme pallor would reappear as though she were again about to faint.

The father returned in the evening. After the occurrence had been rehearsed to him in all its details the girl left the room, taking with her the book which she had been reading at the time of the accident. A moment later a noise was heard by the family. Upon entering the girl's room, she was found lying unconscious beside her chair, the book unopened. She gradually emerged as restoratives were applied. She was then immediately put to bed and soon fell asleep.

Upon awakening in the morning, she had lost all memory of the immediate events for the past twenty-four hours. Fearful of her condition, the mother made no reference to the accident. Despite this the girl fainted three times during that day. Twice this followed the prolonged and shrill whistling of a locomotive. The third attack succeeded a tactless remark of the third-floor neighbor in regard to the hanging of crêpe upon the door. Each attack was brief; of each attack she was amnesic. They were sudden in onset, beginning by a fixing stare of the eyes upward, an expression of horror in the face, terminating with a sudden drop to the floor. There was slight rigidity but no motor disturbance.

Her state between attacks was not normal; she continually talked, wished not to be left alone, seemed agitated and apprehensive yet with no trace of sadness or despondency.

The following day the mother called a physician and insisted upon his "calling to her mind" the events for-

gotten. This he did. The girl remained quiet, cried slightly, said that she remembered and immediately lapsed into an attack rather more acute and extensive than any preceding. Amnesia succeeded as to the particular past events despite the relatively recent revivifying process of the physician.

On this the third day the funeral took place. The mother attended the ceremonies, and upon her return determined that the daughter should not be permitted to forget. Upon entering the girl's room she gave to her a white carnation, saying that with these the casket had been covered. The girl immediately became unconscious. Her condition so thoroughly alarmed the mother that never again was reference to the event permitted.

To avoid completely any tendency towards this, the patient's uncle removed her to his own home situated in a different part of the town. The protection of this selected environment did not change the course of events. The attacks became more frequent. The fixation, the staring, the expression of horror developed, encroaching upon the period represented by the falling and stupor. Thus, though more frequent, they became less alarming to the family, who were becoming lulled into a state of complacency at this spurious improvement.

A new development abruptly shattered this. It seemed that a boy friend had called upon the patient. She recognized him and with him chatted about their mutual friends of their old town. An attack followed this call, with an amnesia, however, still more extensive. She could not place or recall the appearance of this her most recent caller; his and her old home were as well lost to her.

She began to wonder at herself; she could not represent to herself the appearance of those most near to her, her father and mother; she feared to leave them lest in their absence she forget them. In vain did I try to obtain further definition as to the development of this most interesting phase. It seemed to have been abrupt, yet from the scattered observations of others this visit of her friend and the succeeding attack would have seemed to have been the coup d'etat.

Undoubtedly the apprehension of the mother at this moment blinded the acuity of her observations. Fearful of dementia, she imposed upon her daughter a process of that which was purely constructive imagination. To her she described with the minuteness of a Zola the physical, mental, and moral hallmarks of all her former friends. To this she added physical environment, family ramifications, etc. Day by day the daughter listened, learned from her ever-present cicerone. She came to be a polished actress. Few realized they were never recognized by her. The strain became too great for both mother and daughter and they turned to a part of the country where there were no old friends, no definite bond of continuity.

The attacks here became events, which, dissociated from certain environmental marks, were presented the more clearly. It became possible for the mother to generalize their type in a manner impossible at the initiation. They were seen to emerge at periods of abstraction; perhaps as she sat with book in lap looking out upon the sea or listening to one of those dull insistent voices which possess so much of the monotonous, or at other moments when the piano was played quietly, smoothly. At these moments the mother watched her; let her eyes become fixed, "that strange distant look upon her face," her attitude one of intentness, leaning forward, then her mother's hand touched her arm, she emerged, would gasp, say "Where am I?" and straightway fall into her environment.

Periods of acute depression now began to appear. To the mother they came as from a clear sky. An evening singularly pleasant, an apparently quiet night, the depression at the moment of awakening. It was formless, contentless; the girl could not explain it, could not explain herself save to say that the sense of impending something was annihilating her. More alarming than this to the mother was the decrease of interest for her environment, personal and physical. Although the girl lived in a pleasant social circle, received attention from many men, her utter indifference appalled the maternal mind. Hitherto her daughter had been social, engaging, interesting; now there was something indefinably not normal. She could be seen fighting against it in occasional ebullitions of gayety, forced, almost painful. She told the mother that something she knew not what interposed itself between her and the outside world. She read less and less; referred no longer to the past school work and its continuance in the future. It seemed more difficult for her to fix her attention even upon the immediate present; details were continually slipping her; she remembered less of the occurrences of the day. The mother clearly saw this loss of memory synchronously proceeding with periods of greater distraction, which, although no longer presenting the superficial alarming marks, none the less to her suggested not improvement but deterioration.

It was no longer possible to conceal from the new friends this present state. The recent environment had indeed swept away all past foci to which the artificial reaction had been necessary, but the girl's "absent-minded spells" had so increased that they were now matters of common knowledge. She had been seen to stand immobile in the midst of the street traffic, then suddenly turn and hasten to the side; twice she had been lost, as she expressed it, in the suburbs of the town, not knowing how she had arrived there. Hence it became imperative that she be watched or at least placed in an environment so simple and restricted as to diminish the chances of outside accident. Mother and daughter returned to their home in the east.

Again this sudden and complete environmental change clarified the progress of events. During their stay in the south constructive work upon the past had been continued by the mother. The return east had been foreseen by her; that the daughter must have the material for the recognition of her old friends had been her one thought. Now face to face with these friends the mother saw her daughter meet them, use the material of the immediate past instruction as conversational background, thoroughly act her part to all except the mother and herself. They both knew that she did not remember; that there had been no change save further deterioration.

The scanty descriptions of the dream life were of much interest. For a long time after the accident the dreams had been terrors, she had awakened in a frightfully agitated condition. Gradually of late the element of terror had been less predominant more associated with other content, for on awakening there would be described to the mother with the greatest detail the content of her dreams, or rather part of her dreams, for always of part she was amnesic. The content thus described was recognized by the mother as belonging to those environments formerly familiar but now lost and unrecognizable to the patient.

Underlying all this, however, was the persistent haunting sense of a "dissevered self"; there was something lacking, the gap was indefinable but none the less known. At times the torture was as that of Tantalus, so near did she seem to the key of the lost. This change in her personality was not a simple subjective state; it was noted by others; it was translated into many aspects, appeared under many forms. To the

mother this took the adolescent or post-adolescent type; the girl seemed to her as she had been three to five years ago, in her voice, her inflection, the form of her phrases, the content of her speech.

II. Such a descriptive narrative has certain advantages: in it there are no analyses, no conjectures, but merely a tracing of changes as they appeared to one whose position allowed her to see much. To the observer one thing is written large, growth and development. Here was no evanescent shock emotion, but a disturbance extending over twelve months, a disturbance ever growing and developing. To a girl in good health, fatigued, overworked to be sure, came a peculiarly horrible shock. A changed state immediately became apparent, — "queerness, strangeness" were the mother's words. Twelve hours later she lost consciousness, with subsequent amnesia as to the preceding twenty-four hours.

Hence on, the progress is evident. The attacks became more frequent, were of longer duration. More important, their character slowly changed; the prodromal period seemed to increase at the expense of that period represented by the falling and unconsciousness; it assumed more of the petit mal, more of the automatism. Their appearance ceased to bear any relation to known stimulus or excitant; rather they emerged at moments of abstraction, of quiet.

The amnesia, at first local then retroactive, gradually assumed more of the continuous type. Strange affective states began to appear, sudden, almost tempestuous, states, characterized by depression, irritability, irritation, unreasonableness. Dreams became loaded with memories, material lost to her by day found by night. Interest in all things had gone. Social relations became impossible, while the closer family bonds seemed greatly strained. A slow erosion of the personality was taking place; she seemed different, less adult, more simple.

This picture is not formed from unrelated elements, nor again is it an additive combination. On the contrary, throughout it shows organization, interrelation. To the underlying disturbance of consciousness the varied changes were as surface outcroppings are to the mother lode.

Beyond such an assumption, however, can we really read from this narrative without rendering ourselves liable to the offense of reading into it? Of the latter there is but slight danger in assuming that the first disturbance was causally related to the shock; the girl's actions during that first day had imprinted this upon the mother.

Granted this condition and its causative factor, can we further qualify and define? Analogically it would appear that there had been an acute narrowing of the field of consciousness; that the shock with its enormous emotional value had excluded nearly all else; that during the first day it intermittently tended to narrow again and again; that time after time the representative value of the emotion seemed to about exclude, as at first, all other environmental stimuli.

Arriving at the first complete loss of consciousness, her first "attack," we may further assume that this representative value or content of the shock had been sufficiently organized by frequent repetition to obtrude itself to the utter exclusion of that complete environmental reaction of consciousness. The break had been complete.

As consciousness reappeared there was then noted that which meant development. All memory of the day, of the closing attack, had disappeared.

Again we may resort to analogy in presupposing that with each reappearance of the representative emotional content it had become possessed of more inherent potentiality, hence occupying a greater portion of consciousness, hence more isolated, less connected, less associated with the preceding and succeeding moment until its appearance was as *de novo*, and in its disappearance there showed no *traceable* associative bonds with the antecedent and successive states. It had fallen to a lower level, functioning no longer as an associative factor, hence it was lost, hence of it there was amnesia.

The absence of traceable associative bonds has been emphasized. Yet there were definite associative functionings between this lower level and that of the normal. The early attacks invariably followed upon certain stimuli; at one time it was the shriek of the locomotive, at another the mention of crape, again upon the presentation of white carnations, or the sudden appearance of an extensive red mass. In this connection also it will be recalled that her first attack occurred while holding in her lap the same book which she had been reading at the time of the accident. All these seem associative bonds but in the narrative not traceable as such.

As the attacks continued it was observed their appearance less and less regularly followed the abrupt, sudden stimuli above mentioned, but rather they tended to appear at moments of the slightest abstraction, moments of quiet, under conditions of monotonous stimuli, such as the droning of a voice, the soft playing of a piano, conditions normally conducive to the narrowing of the consciousness. The increasing frequency of their appearance at such moments points to the growth about that nucleus lying at a lower level; it shows a gradual organization about this; that its potentiality was increasing in that its emergence at favorable moments was ever more ready, more frequent.

Concomitantly there appeared more of automatism. Compare the later attacks wherein she had been walking about strange portions of town unconscious, yet of this affording no criterion to the passerby, compare these with the type of attack wherein she fell to the floor, to all apparently unconscious. So far had the initial nucleus been organized that now in its emergence at the normal level there was no longer a transition from consciousness to unconsciousness but rather a transition from one type of consciousness to another.

Of this organization, of this accrement of material about the dissociated nucleus the amnesia

forms a living curve. At first this was definitely localized; it involved only the first twenty-four hours, later the immediately preceding attack. Beyond this it did not, as first, extend. In a short time there was a marked retroactive movement; a large part of past experience was lost. This retroaction continued. Gradually on its heels there was seen appearing an amnesia of the continuous type, more immediate.

All this loss as seen in the amnesia meant accrement about the nucleus, it meant organization, it meant increase along the lower level at the expense of the upper, the normal level.

Viewing this lower level consciousness and its organization as the fundamental, the primary thing, then that which followed of necessity must have followed.

The flooding of dreams filled with strange unrecognized content found its spring in this latent growing depository. The affective states readily might rise as the emotional echo of this mighty nightly invasion of the past into the present, for always these states appeared suddenly in the morning.

The gradual loss of attention, of interest must have followed the progressive narrowing of her consciousness, a narrowing in inverse ratio to the growth of the lower level consciousness.

Finally the erosion of personality is not a bare descriptive term; on the contrary, it represents an actual condition. Given all that go to make up the ego, the personality as an individual and as the socius, given all the extension into the past with all its ramifications, given the synthesis of the present moment with its varying richness, given these and we have a complex which by its very multiformity, its lability can be gradually or suddenly changed. Consider that which had been lost: the past of her girlhood, the past of all that bound up with the period of efflorescence, of adolescence; to this loss more ever being added, the present moment seeming ever more tenuous, uncertain, insecure. Her own rather fine appreciation of the condition put this on record as the sense of a "dissevered self." The disturbance of consciousness following an acute shock had indeed developed to that point where it constituted a disease of personality.

(To be continued)

WHAT THE SUBURBAN SURGEON IS DOING IN THE ABDOMEN, AND HOW HE DOES IT.

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(Concluded from No. 8, p. 220.)

GROUP III. — GALL BLADDER AND BILE DUCTS.

Twelve cases of disease of the gall bladder and bile ducts, including two cases of acute cholecystitis, one of which had ruptured; two cases of chronic empyema of the gall bladder, both of which had ruptured, one into the peritoneal cavity, and the other, protected by adhesions, resulted in a secondary abscess behind the gall bladder; five cases of chronic trouble, in which stones were found limited to the gall bladder or cystic duct; one case of extensive disease of the bile tract, without gallstones; one case in which only light adhesions were found; and one case of calculous obstruction of the intraduodenal portion of the common duct. The only death in this series occurred from rupture of an empyema into the peritoneal cavity.

This list, while not large, affords an experience of some interest in the surgery of the gall bladder and bile ducts. I will report several cases very briefly, as illustrations:

Case I. Female, forty-four, a patient of Dr. Murphy of Amesbury, was taken four or five days before I saw her with what appeared to be a typical attack of appendicitis. She gave a history of several previous attacks of a similar nature. Upon opening the abdomen, it was found to contain a considerable quantity of bile-stained fluid. The appendix was normal. The gall bladder was found to be much enlarged, livid in color, and very tense. It was adherent posteriorly in a mass of exudate of recent origin, which had evidently closed the rupture. Believing this to be the fact, I did not attempt to free the gall bladder, but made an opening in the anterior wall, and after evacuating quite a quantity of dirty brownish fluid and three large gallstones, one of which was impacted in the entrance of the cystic duct, I drained. The space between the ascending colon and the parietes, where most of the extravasated material had collected, was wiped out with sponges and the abdomen partly closed. The patient made an excellent recovery. The outcome in this case was hardly to be expected, for we are taught that the infection in acute gangrenous cholecystitis is exceedingly virulent, and that where the process goes on to perforation a fatal result is practically certain.

To show that gallstones are not always found in the presence of other marked pathological changes in the gall bladder and bile ducts I will report the following case:

Case II. Female, forty-one, a patient of Dr. Croston of Haverhill, had been jaundiced for many weeks. She had suffered from persistent stomach disturbance, and had lost a great deal of flesh. Tenderness on deep pressure was present in the region of the gall bladder, but aside from this the physical examination was negative. We supposed the case to be one of stone in the common duct. The gall bladder was found contracted, thickened and adherent, and it contained no calculi. The foramen of Winslow was obliterated. Enlarged glands were felt in the gastro-hepatic omentum; the head of the pancreas was swollen and indurated, but no stones could be felt in the common duct. The gall bladder was opened and found to contain some bile. Drainage by rubber tube. The jaundice began to grow less marked in about two weeks and finally wholly disappeared. The fistula closed in seven weeks, and the patient is at present perfectly well. Occlusion of the common duct in this case was unquestionably due to external pressure, caused either by the head of the pancreas, or enlarged lymph glands in the gastro-hepatic omentum, the entire process being an expression of infection in the bile tracts, in which gallstones may or may not have been a part. In any event, drainage resulted in cure.

Robert Morris has recently called attention to the importance of light adhesions between the gall bladder and adjacent viscera, in producing symptoms suggestive of gross disease of the bile

tracts. He has named them gall spiders, and believes that they are the result of repeated mild attacks of acute cholecystitis. A case of this kind, which seems typical, may be cited.

Case III. Female, forty-one, a very nervous patient of Dr. Young of Haverhill, had suffered for five years with attacks of severe pain in the right hypochondrium, associated with acidity, flatulence, nausea and usually vomiting. The pain was referred to the back and right shoulder. These attacks almost invariably began late at night or in the early morning, when the stomach was empty. Recently the attacks have become more frequent and more severe. I saw her in consultation, made a diagnosis of gallstones, and advised operation. She also consulted a prominent Boston surgeon, by whom she was informed that hers was a typical case of gallstone trouble, and that operation for this condition should be done at once.

I operated shortly afterwards, and found nothing whatever to explain her symptoms, except a few filmy adhesions between the gall bladder and pylorus. These adhesions were separated and the abdomen closed. Recovery from the operation was rapid and smooth. After the operation the various functions of the stomach were investigated by Dr. M. P. Smithwick of Boston, and found to be normal. She has been perfectly well for eight months, except for an attack of indigestion in May, in which the nervous element seemed very prominent. This followed a period of very hard work and great anxiety occasioned by the illness of an intimate friend. Whether or not this indicated a return of the trouble I cannot say.

The question of how best to remove gallstones impacted in the intraduodenal or retroduodenal portion of the common duct has called forth some discussion, and the matter is by no means settled. This can be accounted for by the rarity of the condition, and the fact that but few cases have been reported. Two methods are in general use, viz.:

Transduodenal choledochotomy, first performed by McBurney in 1891. In this operation the second part of the duodenum is opened. If the stone is impacted in the ampulla of Vater the papilla is either dilated (a modification of McBurney's technic, suggested by Collins), or incised and the stone scooped out. If the impaction is higher up in the intraduodenal or retroduodenal part of the duct the posterior wall of the gut is opened, the duct incised, and the stone removed. No sutures are necessary if the papilla is slit up or the intraduodenal portion opened, but the edges of the incision in the duodenum should be sutured to those in the common duct, if the latter has to be incised after it leaves the wall of the intestine. The opening in the anterior wall of the duodenum is closed by two rows of sutures.

The other procedure, known as supra- or retroduodenal choledochotomy, is credited by Moynihan to Haasler, and by Bryant to Berg. In this operation the duodenum is mobilized to the left, after a longitudinal incision through the peritoneum to the right of its second portion. This maneuvre, it is said, affords easy access to that part of the common duct in question. As to which of these two procedures is the more rational I will not venture an opinion.

Thienhaus, in the *Annals of Surgery*, for December, 1902, reports 29 cases of transduodenal choledochotomy by various operators, including one of his own, with two deaths, a mortality of a little less than 7%. He thinks that Mayo Robson's objection to this operation, based largely upon the idea that the danger of sepsis is greatly increased by opening the intestine, is not well founded, inasmuch as the published cases operated upon by the McBurney method show but a slightly higher death-rate than is claimed by him as a future possibility in common duct cases, and that further evidence is necessary to settle the question. He cites some of the disadvantages of the retroduodenal procedure, such as the danger of wounding a branch of the pancreatico-duodenal artery, and the danger of injury to the pancreas. He also refers to two cases reported by the Mayos, where attempts to remove stones from the lower end of the common duct resulted in forcing the finger well into the duodenum at an adjacent point rather than at the site of the papilla. The following case is reported for what it is worth in this contenton:

Case IV. Female, thirty-two, one child, a patient of Dr. Young of Haverhill, had suffered for about eight years with recurring attacks of pain and tenderness in the region of the gall bladder, associated with fever and stomach disturbance. Three similar attacks within a year and a half, not including the last, had been followed by transient jaundice. Two weeks before the operation an attack occurred in which deep jaundice quickly developed and persisted. Pain and tenderness not marked, pulse rapid, temperature irregular, no chills, no tumor, liver dullness much increased.

Operation. — Abdomen opened through outer border of right rectus. Liver much enlarged. Gall bladder, contracted and thickened, containing no stones. Foramen of Winslow obliterated by adhesions. There was no stone in the upper part of the common duct, but a hard mass, the size of an olive, could be felt behind the duodenum. The vertical portion of the gut was carefully isolated by gauze strips, and an incision about two inches long made in the anterior wall. The papalli was not seen, but the stone could be plainly felt, just beneath the duodenum. I then cut directly down upon it, while the assistant made pressure from behind. It was easily scooped out of its bed, and was followed by a very profuse flow of bile. I was satisfied that I had opened that part of the common duct within the wall of the duodenum, because no distinction between the two structures could be made out; hence sutures were not necessary, and none were used. The anterior wall of the gut was closed by two rows of sutures and covered by an omental graft. The abdomen was closed in layers. Aside from persistent vomiting of bile for thirty-six hours, which was promptly relieved by lavage, the patient made an uninterrupted recovery.

Technic. — A sand bag is placed under the back opposite the liver, to bring the field of operation, especially the deeper parts of the common duct, as near the surface as possible. The incision is made through the outer border of the right rectus, from the costal margin downwards. I have found that upward rotation of the liver, after pulling it down from under the ribs, as suggested by Robson, to be of great assistance in gall-bladder work.

My method of doing cholecystostomy is as follows: After the abdomen is opened the neighborhood of the gall bladder is carefully protected by gauze. Two traction sutures are placed in the anterior wall near the fundus, about one-quarter inch apart, and an aspirator needle thrust in between them to evacuate as much of the contents as possible. The needle is withdrawn and an incision made at the point of puncture. The escaping bile or pus is quickly and carefully mopped up to avoid soiling. Gallstones, if present, are removed by a scoop, and if any are impacted in the cystic duct they can usually be readily pressed back into the gall bladder.

A rubber tube is then fastened into the gall bladder by means of a plain catgut stitch through the edge of the incision and through the tube, and by a purse-string suture of chromic gut. When the latter is tightened the edge of the incision should be inverted; this makes a smooth joint and one not likely to leak. The gauzes used for walling off are removed and three moderate sized cigarette drains are placed in position, one below the tube and one to either side of it. The abdomen is then closed generally in layers, up to the drains. I believe that tube drainage is much to be preferred to the old-fashioned way of sewing the gall bladder to the peritoneum, — a method often difficult, especially when the gall bladder is deeply placed, contracted and more or less adherent, and one likely to be followed by a needlessly prolonged biliary fistula.

I am convinced, also, that the rubber tube possesses advantages over the double-flanged glass tube tied into the gall bladder with catgut. In the case of the former, it comes away with the dressings after four or five days, when the fixation suture softens. On the other hand, the glass tube may become imbedded in the tissues and even require ether for its removal; this happened in one of my own cases, and also in a case operated on by one of my friends.

GROUP IV. — HERNIA.

There were 24 operations for hernia, — 16 inguinal, 4 ventral, 2 femoral and 2 umbilical.

Of the inguinal hernias 1 was double, 2 congenital and 3 strangulated; there were 13 males and 2 females. One right-sided hernia in a male proved to be the so-called sliding variety, the contents of the sac being cecum and appendix.

The only death in the hernia cases occurred in an old man with a right inguinal hernia, in whom strangulation had been present for several days. The intestine was gangrenous, and it was necessary to resect a portion six inches in length; anastomosis was made with the Murphy button. The patient died in five days from peritonitis.

In the first ten cases the Bassini method was closely followed, except that kangaroo tendon was used to unite the conjoined tendon to Poupart's ligament, instead of silk, as is done by Bassini himself, and some other operators whom I have seen. In the last five cases the technic has been somewhat modified. Influenced by the teaching of Eccles, Scudder, Connell, Tinker and others, I have not transplanted the cord. The idea that this step in the operation is unnecessary and may be omitted is rapidly growing in favor. Furthermore, by leaving the cord in its natural position certain disadvantages in the original procedure are eliminated. For example, as Connell has pointed out, the rough manipulation necessary in separating the mesocord from its normal attachments and the added traumatism to which the cord is subjected in its new position are inimical, in some degree at least, to the functional activity of the testicle, for, as is well known, orchitis, epididymitis, and even hydrocele and varicocele, do occasionally follow the Bassini operation. Scudder says: "It seems to me of comparatively little importance whether the cord is or is not transplanted. I am more and more inclined not to transplant it."

The only other modification which I have used is that of mobilizing the neck of the sac from behind the fovea inguinalis externa behind the internal oblique muscle, as described by Tinker. In this procedure the ends of the purse string are left long and threaded into needles which are carried through the internal oblique well above its lower border, from behind forwards; they are then drawn up and tied. This takes the neck of the sac away from the funnel-shaped opening into which the peritoneum normally falls, and seems to be of some advantage. In one recent case, where the neck of the sac was very wide, I found it much easier and safer in closing to use the continuous lock stitch, as suggested by Scudder, instead of the ordinary purse-string suture.

Another thing which helps one greatly in operating for hernia is a moderate Trendelenberg position. With the assistance of gravity thus afforded, the protrusion will often reduce itself, so to speak, after adhesions are separated, and, what is of far greater importance, it will remain out of the way while the operator closes the sac.

Femoral hernia is relatively uncommon, and there are but two cases in this list, both strangulated. Of the various methods in general use I have selected the simplest, the one adopted by Bull and considered by him as good as any, that of stitching the pectineal fascia to the lower edge of Poupart's ligament with two or three kangaroo tendon sutures.

Both cases of umbilical hernia were in very obese females, over seventy; the contents of the sac were largely omental, and strangulation was present in each. In these cases I used the Mayo technic, with overlapping from above downwards.

In ventral hernia it is my custom to take out a section of the abdominal wall which shall include the cicatrix. It is necessary to use extreme caution in these cases, on account of adhesions, which, although usually mental, may consist of intestine. Each layer is identified and separately approximated with kangaroo tendon of varying sizes.

GROUP V. — MISCELLANEOUS.

In this group there were 31 operations for a great variety of conditions, viz.: 7 cases of intestinal obstruction, including 3 cases of post-

operative occlusion by bands, 2 early and 1 late: no deaths; 2 cases of intussusception, 1 of which died after a second laparotomy for recurrence; 1 case of cancer of the sigmoid, in which resection and anastomosis with the Murphy button was done; death; 1 case of stricture of the descending colon, probably of tuberculous origin, in which perforation had occurred, resulting in septic peritonitis: death; 2 cases of tubercular peritonitis: 1 death; 2 abdominal nephrectomies, 1 for disease and 1 for traumatic rupture of the kidney: no deaths; 1 case of gunshot wound of the abdomen: death; 2 colostomies for cancer of rectum with operative recovery in both; 1 case where a secondary operation was done for the purpose of draining a suppurating focus following removal of the adnexa: recovery; 1 case of infection and marked swelling of the mesenteric lymph glands with localized peritonitis of portion of intestine subtending area involved: recovery; 1 case of general septic peritonitis early in the puerperal period, supposed to be appendicitis or tube, where no lesion was found in either — probably a streptococcus infection: death; 14 explorations, including 1 case of acute hemorrhagic pancreatitis: death; cirrhosis of liver, 2 cases, 2 deaths; uterine fibroid associated with such extensive adnexal disease as to be considered inoperable, 2 cases; retro-peritoneal sarcoma, 2 cases, 1 death; pregnancy; inoperable cancer of abdominal wall and bladder; cancer of sigmoid; cancer of cecum; cancer of body of uterus with omental metastases and ascites; tumor of liver, not improbably angioma; typhoid fever supposed to be appendicitis.

A brief account of the fatal cases in this group may be of interest.

Three deaths followed operations for intestinal obstruction, the first from perforation and peritonitis associated with stricture of the descending colon, in a young man, probably of tuberculous origin. In this case mild and recurrent symptoms of obstruction had been present for several days before operation.

The second patient, a woman of fifty-six, gave a history of three previous attacks of acute constipation with distention and abdominal pain, within a year. Each one was followed by bloody stools. Nine days before being admitted to the hospital she was taken with a similar attack, and continued to grow progressively worse, so that at the time of operation obstruction was practically complete. Upon opening the abdomen a tight annular stricture of the upper loop of the sigmoid was found, with marked induration of the gut for about an inch to either side of the constriction. The intestines above were greatly distended. I rapidly excised about six inches of intestine and did an end-to-end anastomosis with the Murphy button. The patient died on the fifth day, apparently from exhaustion, for the bowels had moved freely and the distention had disappeared.

The third fatal case in this list was a boy of four, with a history of diahrrea for a few days, followed by abdominal pain, vomiting and bloody stools. On examination the abdomen was not particularly tender and not distended; a doughy mass was felt on the left side, extending from just below the level of the umbilicus upwards into the left hypochondrium. The invagination was found to begin at the middle of the transverse and to extend perhaps three inches beyond the splenic flexure into the descending colon. It was readily reduced by proximal compression. The patient did well for forty-eight hours, but at the end of that time pain and vomiting returned, and the bunch reappeared in the left side. The abdomen was reopened and reduction effected as readily as before; the gut looked well, there was no peritonitis. The patient died nine hours after the operation, presumably of shock.

In the list of explorations there were 4 deaths; 1 from shock, in a case of hypertrophic cirrhosis of the liver, associated with glycosuria, where marked tenderness and rigidity in the right upper quadrant, with fever and rapid pulse, were taken to mean an acute gall bladder; 1 from hemorrhage arising from esophageal varices in a female suffering from cirrhosis of the liver, supposed to be gastric ulcer; 1 from acute hemorrhagic panreatitis in a man fifty-two years old, of alcoholic habits and a previous history of gallstone colic. He was taken forty-eight hours before the operation with severe epigastric pain, vomiting, distention and rigidity of the upper part of the abdomen and obstinate constipation; pulse small and very rapid, temperature 101.2, marked cyanosis. Acute pancreatitis was the probable diagnosis. In this case I hoped to accomplish something by the method suggested by Hahn, and successfully practiced by Woolsey, Pels-Leusden and others, of rapidly opening the abdomen, evacuating the septic fluid and draining. The patient was lightly etherized and an incision made in the epigastrium. The peritoneal cavity contained quite a quantity of brownish, dirty fluid, and spots of fat necrosis were found widely scattered over the omentum, thus confirming the diagnosis. The patient suddenly collapsed and died on the table, before infusion could be done. I then made an incision through the transverse mesocolon, exposing the pancreas. It was swollen throughout, and on section *in situ* showed the characteristic mottling of the acute hemorrhagic form of infection. I believe that it would have been much better in this case if I had infused before beginning, and had operated under local instead of general anesthesia.

The other death in this group occurred in a female patient of forty-two with a fixed tumor in the right iliac region, apparently the size of a large fist. It had caused her no pain, her only complaint being slight occasional soreness. Catamenia normal, nothing to be felt by vaginal examination. No loss of flesh, color fairly good.

Upon opening the abdomen, a large, irregularly globular mass was found on the right side, with the greater part of its bulk above the iliac border. The iliac vessels and ureter were seen coursing across the growth toward the inner side. Its surface presented many dilated and tortuous veins. I made a short incision through the peritoneum over the tumor, and, from the ease with which it could be separated, I concluded that enucleation might be possible, although I realized that very free hemorrhage might occur. I therefore proceeded to shell out the mass as

rapidly as possible. This was easily accomplished, except at its lower extremity posteriorly, where it seemed to be made up of accessory nodular masses, so firmly adherent that separation was impossible, and I made no further affort to remove it. Gauze packing was not sufficient to entirely control the hemorrhage. Death occurred from shock two hours after the operation.

There was one fatal case of tubercular peritonitis in a little girl of ten years, where the abdomen was filled with bloody fluid.

One patient died of gunshot wound of the abdomen, who was operated on four hours after the injury. When first seen, just before the operation, there was no evidence of shock, pulse 86, of good quality, no pallor, and only slight pain in the abdomen. Examination showed a bullet wound on the left side, one inch below the level of the umbilicus and two inches from the median line. Under ether the wound was slightly enlarged and found to be penetrating. The abdomen was then opened by a median incision below the umbilicus. The peritoneal cavity contained a large quantity of blood; twelve perforations were found in the small intestine and four in the mesentery. The perforations in the mesentery and four of those in the ileum were closed by suture. A portion of ileum twelve inches long, containing eight perforations, was resected and end-to-end union made with the Murphy button. The abdomen was thoroughly flushed with large quantities of warm normal salt solution, a large wick placed in either side of the pelvis, and the abdomen partly closed. During the operation two quarts of salt solution were given by intravenous infusion. The patient died on the fifth day. Peritonitis was found at the autopsy. No further perforations were discovered, and all the closures, including the anastomosis, were intact.

The two cases in which abdominal nephrectomy was performed presented unusual features, and it may be worth while to report them somewhat in detail.

Case I. Charlotte C., ten, a patient of Dr. Young of Haverhill, ran into a step while sliding and struck upon her side right or back, at about 11 A.M., Feb. 19. Being, apparently, somewhat hurt and unable to walk, she was hauled on her sled by a playmate to the house of her aunt, who lived near by. She at once lay down on a sofa and remained there most of the afternoon, occasionally getting up and walking about, but making no complaint. In the evening she ate some supper and went to bed at the usual time, nothing being heard from her during the night. About 10 A.M. of the following day she was taken home by her father. They walked about a quarter of a mile, took an electric car, rode a mile, alighted and walked another quarter of a mile to her home. She was somewhat exhausted by the trip, but aside from this seemed to be in good condition. As the day wore on she complained of considerable pain and soreness in her right side, and Dr. Young was summoned. I saw her in consultation shortly after 5 P.M. At that time she showed a good face, somewhat flushed, pulse 150, temperature 100.2°, marked tenderness and board-like rigidity of the whole right side. There were no external evidences of injury. The bowels had moved three times since the accident, with no blood in the stools. The urine was passed normally and contained no blood. An exact diagnosis could not be made, but it was clearly evident that we were dealing with a serious condition, one which demanded immediate operation. The child was taken at once to the Hale Hospital. Operation thirty-two hours after the accident. An incision three inches long was made through the outer border of the right rectus, beginning just below the level of the umbilicus. Upon opening the peritoneal cavity considerable free blood was found in the right iliac fossa and in the space external to the ascending colon. Blood had also escaped between the folds of the mesentery of the colon, dissecting its way half around the gut at some points, and near the hepatic flexure and ileo-cecal region it had completely encircled it under the peritoneum. A large retro-peritoneal hematoma was seen extending from the region of the right kidney well down over the pelvic brim. Upon breaking up and dislodging a mass of loose clot to the outer side of the colon, it was found that the peritoneum covering the anterior surface of the kidney was torn, and fresh blood was seen pouring through the rent. This opening was quickly enlarged and the kidney palpated; it was partially detached and apparently extensively lacerated. I removed the kidney as rapidly as possible, tying the pedicle with a mass ligature. A gauze strip was tightly packed into the space occupied by the kidney and the abdomen partly closed. During the operation the patient was given a quart of normal salt solution by intravenous infusion. Upon examining the kidney after removal it was found that the capsule and part of the cortex were torn off over a greater part of the postero-external surface, and that a laceration extended into the pelvis. The patient made an uninterrupted recovery.

Case II. Female, fifty-eight, also a patient of Dr. Young of Haverhill, had suffered for several years from what had been supposed to be gallstone trouble. She had had many attacks, in all of which vomiting and pain in the region of the gall bladder were present, and in some of which jaundice was also present. She had lost a good deal of flesh, complained of constant soreness in the upper part of the abdomen and suffered from persistent indigestion.

Operation. — Incision through the outer border of the right rectus from the costal margin downwards. A small cirrhotic kidney was found imbedded in a mass of adhesions, firmly attaching it to the right lobe of the liver, gall bladder and duodenum. It was removed with some difficulty, and after assuring myself that no stones were present in the gall bladder or common duct, I closed the abdomen. The patient made a good recovery, gained flesh rapidly, and has been in excellent health for three years.

In conclusion, the sum total of this experience shows a series of 281 abdominal sections with 31 deaths, a mortality of a little more than 11%. I have shown that some of the cases were operated upon under circumstances exceedingly unfavorable, and therefore it is fair to conclude that a considerable number of the deaths might have been prevented by more timely interference, especially in appendicitis. It is also fair to conclude that in the list of explorations there were certain cases so unlikely to be helped by a surgical operation that none was indicated, and to avoid such occurrences one should carefully investigate every available source of information which might lead to a correct diagnosis. The

point of view and the methods which I have used have been stated in the course of the paper, and need no further comment. It goes without saying that I have touched but lightly at a few points in the great field of abdominal surgery, and while such a limited experience gives no man the right to speak with authority, I would suggest to the suburban surgeon, that he must know his anatomy better, that he must be more careful of his asepsis, that he must use better judgment in the selection of his technical methods, that he must have the courage to refuse to operate simply because he has an opportunity, and finally to increase his resources in general he must make frequent visits to the surgical clinic of a large hospital and sit at the feet of the masters.

DISCUSSION.

DR. S. J. MIXTER of Boston: I feel I cannot let this paper go by without a word. I think Dr. Durant's results are good, and the paper is very good. But I want to begin and find fault with one thing. It seems to me that the serious fault is in regard to the title of his paper. The title is about the suburban surgeon. I do not understand why he should give it this title. There is not a thing that he has said that does not apply to the surgeon in the large city just as much as to the man whom he calls the suburbanite. A man is a surgeon or he is not a surgeon. There are mighty poor surgeons in the city, and there are mighty good surgeons in the country. Therefore I do not understand why he should give his paper that title.

As to his remarks on technic I have little to say. Let every man find out what is the best technic for him to use and let him use it. I think the men who are changing all the time fail to arrive at results. As far as the technic of asepsis goes, I am sure that we have all come down to simplifying methods rather than to elaborating them, and that to-day much less is expected if it is done carefully, if it is done thoroughly, than was expected years ago. After all, as Dr. Durant has shown and as we all know, the first important thing is the scrubbing brush and soap and hot water. What you use after that I think makes very little difference.

As I said a short time ago in speaking on the surgery of the stomach, a gastroenterostomy and so on — let every man practice what he makes up his mind is the best method of operating in a given case and let him then follow it, but do not let him practice it until he has tried it on a living lower animal. I think this question of suburban surgery has solved itself. It is not like the old days, when a few operations were done. Now there is more surgery than men connected in the hospitals can do. The only thing is that he should be a man who is fit for it and has studied it, and who, as Dr. Durant has said, does not operate simply because he has a chance.

DR. E. W. CUSHING of Boston: I feel somewhat as Dr. Mixter does as to the title of this paper. It does not seem to cover the title. If it were entitled what the skillful operator is doing, it would answer the question more fully. In writing a paper some years ago I pointed out the growth of the small hospitals in America, especially in the New England States, and contrasted it with the hospitals of Germany, and found that in each one of these hospitals a great many mistakes had been made.

I wish Dr. Durant in closing would give us an idea, if he cares to, whether this is a fair representation of what the little hospitals and suburban surgery are at present.

In regard to his remarks on treatment I think we should all agree. I have always taken the ground in regard to appendicitis that the salvation of the patient was in the very careful diagnosis and the very early operation. I understand that Ochsner's observations may have their bearing in cases which are not seen in the very beginning. It seems to me, however, that Ochsner's theory of waiting is not a very wise one, that on the whole it is better to try and make a diagnosis at once and operate at once even though it is found that the appendix is not very bad after all.

DR. DURANT: In answer to Dr. Mixter's question in regard to suburban surgery, I would only say, that I wished to approach the subject in a modest way and report regarding two hundred laparotomies or thereabouts. In regard to the question as to the kind of work which is being done in the suburban hospitals I have nothing to say. If Dr. Richardson were here the matter would be brought out more clearly.

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Clinical Department.

THE SUBMUCOUS RESECTION OF THE NASAL SEPTUM.

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WITHIN the last few years numerous papers have been written upon submucous resection of the septum. Nearly all of the methods described are alike, in that they make use of a large flap of the mucous membrane of the convex side. The object of this paper is to describe a simpler and quicker method as regards both operation and after treatment, which can be used in all degrees and forms of deviation of the nasal septum.

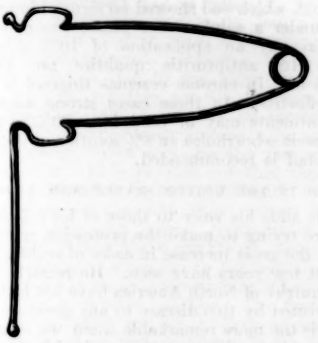
Careful asepsis is very necessary for quick results. The patient's face should be washed, and any secretion which may be in the nostrils removed with alkaline solutions. Sterile towels are to be wrapped about the head and neck.

The septum is now cocainized, a 4% solution being sufficiently strong. It may be applied either by swabbing or on pledgets of cotton packed in the nostril. Following cocaine one should use adrenalin, 1–1000 in the same manner. This is to be followed by a submucous injection, which should be commenced well anterior in the vestibule. For this purpose I have used a solution composed as follows:

Adrenalin, 1–1000 = 1 part.
Sterile normal salt sol., 5 parts.

The ordinary hypodermic syringe with a needle about one and one half inches long can be used. It is well to have the bevel side of the tip towards the septum. If the injection is correctly done the mucous membrane appears pale and elevated. Both sides of the septum should be anesthetized.

The incision through the mucosa may be made with any sharp-pointed bistoury and is made as follows: By elevating the tip of the nose and slightly twisting to one side, as a rule away from the convex side, one will see a well-defined white ridge, which is the free end of the quadrangular cartilage. The incision is carried along this ridge from the nasal spine to the tip of the nose. A self-retaining nasal speculum is then introduced into the nostril of the obstructed side, and a clear view of the field of operation is obtained. I have modified a self-retaining speculum, devised by Dr. J. H. Allen of Portland, Me., for this purpose (see fig.) and which is a very great



aid in operating, not only on deviated septa but in all intranasal work. The upper edge of the wound is seized with fixation forceps and the mucosa dissected away from the cartilage with the bistoury. The mucosa of the septum is adherent very closely everywhere within the vestibule, along the synchondrosis between the cartilage and bone, and very often on the concave side, especially if the deviation is angular. The adhesions along the synchondrosis can usually be readily freed with a moderately sharp elevator. Once by the normally adherent mucosa of the vestibule, the dissection is rapid, except in very angular deviations, when one must go slower, especially over the crest of the convex side, where, as a rule, the mucosa is atrophied and very thin. The dissection should take in as much as possible of the deviation; sometimes the deviation takes a sharp turn posteriorly, and it is impossible to get around without buttonholing. In such a case it is well to remove the anterior obstruction first, when the operator has more room to get at the posterior obstruction.

To dissect away the mucosa of the concave side it is unnecessary to cut through the cartilage, as most writers say. All that is necessary is to take out the speculum of the convex side, elevate and slightly twist the tip of the nose and dissect the mucosa free from the cartilage, the same as on the opposite side. Having once started the dissection, a self-retaining speculum can be placed in the nostril of the concave side and a perfect view obtained. The mucosa of both sides being free, the self-retaining specula are removed, and a short Killian nasal speculum introduced between two layers of the mucosa. The cartilage and bone are now both free, and separated from mucosa by the two blades of the speculum. To remove the cartilage I use a long, narrow gouge with dull corners. By using a circular motion of the cutting edge long strips of cartilage can be easily removed. The bony portion is to be removed by a modified Grünwald punch. The offending portion having been removed, the cavity is carefully swabbed out and all fragments of cartilage and bone removed.

If the deviation was very extensive I pack both sides lightly with sterile cotton wrapped in Cargyle membrane. This dressing is easily removed at the end of twenty-four hours and prevents possible post-operative hemorrhage with formation of blood clot. In cartilaginous deviations a single suture without any packing is sufficient. No dressing is necessary after twenty-four hours. Moderate swelling of the septal mucous membrane lasts from four to eight days after operation. If there are signs of sepsis I have used a spray of argyrol 5% with good results.

The advantage of the above method over those previously described is that there is no cartilage to cut through; one goes around the free border and thereby lessens the danger of perforation. It also shortens the duration of the operation and gives one much more room to work in than when one cuts through the cartilage farther back. The objection to removing the lower and anterior portion of the cartilage does not hold so long as one leaves sufficient cartilage along the dorsum of the nose about the bridge, because the tip of the nose is kept up by the lateral cartilages.

Medical Progress.

REPORT ON DERMATOLOGY.

BY JOHN T. BOWEN, M.D.

EUCALYPTUS DERMATITIS.[1]

Galawsky refers to the numerous articles recently published on the subject of dermatitis caused by the primula obconica and primula sinensis, and expresses his suspicion that numerous cases of dermatitis which appear on uncovered portions of the body are perhaps referable to contact with plants.

He relates two cases of poisoning from eucalyptus plants, either by contact with them or by their presence in the house. The eucalyptus plant has for a long time been known as a remedy. The planting of eucalyptus trees as a protection

against malaria has increased from year to year. Formerly eucalyptus was given as a disinfectant in scarlet fever and as a urinary antiseptic. The oil of eucalyptus is in popular use for neuralgia and rheumatic affections. The writer believes that dermatitis caused by the rubbing in of the eucalyptus oil is not an uncommon occurrence, and refers to a case which he has had in the last year where an acute dermatitis appeared four days after the application of eucalyptus oil. The eruption was a small papillary one, which was intensely pruritic, and quickly healed under appropriate treatment. The two cases above referred to are of considerable interest. In January he was called to see a woman who was suffering from an erythematous dermatitis of an urticarial type and intensely pruritic. The dermatitis consisted of large and small urticarial plaques, between which there were some erythematous areas, and was especially pronounced on the parts free from clothing, and also on the neck and breast. There was intense itching and the affection had existed for some time. The patient declared that the eruption was always better when she was away from home, and she also had the feeling that it was always worse when she occupied a certain chamber in her house. In the room there were found bushes of eucalyptus, which had been placed there for the purpose of decoration. The suspicion was therefore expressed that it was not impossible that these eucalyptus plants were responsible for the skin affection. The servant who was present at this interview expressed so much skepticism that to prove the falseness of this theory she rubbed her own skin with these same eucalyptus plants. The consequence was that half an hour later she had the same eruption as her mistress. This proved conclusively that eucalyptus was capable of causing, and in this instance did cause, a dermatitis. The affection healed slowly but gradually under soothing treatment.

The writer evidently is not acquainted with the numerous plants that have been shown, especially in America, to produce dermatitis.

THIGENOL.[2]

Bloch relates his experience with a new organic sulphur compound, which has been named thigenol. He points out that the history of the use of sulphur in skin diseases shows a gradual substitution of artificial for natural sulphur preparations. Sulphur, as is well known, has been used empirically for a great many years. It was reserved for Haase in 1820 to point out that its efficacy depended, somewhat at least, upon its power of withdrawing oxygen. Later its antiparasitic action was discovered. In 1882 Unna added to our knowledge by pointing out the great efficacy of organic sulphur compounds, among which ichthyol has obtained the most prominence. The superiority of organic combinations of sulphur over the inorganic is due, according to Unna, to the firmer incorporation of the sulphur, which makes them much less irritating. They may be combined with lead and mercury without precipitation.

Unna has claimed for these so-called reducing agents an astringent and consequently anti-inflammatory and analgesic action. The disadvantage of ichthyol has always been its odor. It is to obviate this disadvantage that thigenol has been introduced. It is a synthetic preparation in which 10% of sulphur is organically incorporated. It is a brown, syrupy fluid, without odor and almost without taste, fully soluble in water, dilute alcohol and glycerin. It is easily washed from the skin with water. Theoretically, thigenol may be used in the same conditions as ichthyol. The writer's own trials of thigenol have convinced him that it is actually a real advance in the sulphur treatment of skin diseases. It should especially obtain a wider use than ichthyol, as it is effective in acute eczemas, and without irritation. An acute vesicular eczema of the cheek in a patient twenty years old, which had showed no signs of improvement under a sulphur zinc paste, was cured in two days by an application of 10% thigenol paste. Its antipruritic qualities are highly spoken of. In chronic eczemas thigenol is also very effective. In these cases strong solutions and ointments may be used, from 20% to 40%. In alopecia seborrhoica an 8% solution of thigenol in alcohol is recommended.

SCABIES IN THE UNITED STATES AND CANADA.[3]

Hyde adds his voice to those of his colleagues who are trying to make the profession generally realize the great increase in cases of scabies that the last few years have seen. He remarks that the countries of North America have not hitherto been visited by this disease to any great extent, which is the more remarkable when we consider the size of our cities as compared with those in Europe. He calls attention, however, in this connection, to the wide variation in overcrowding of population, which is so much greater in London, for example, than in New York.

In the year 1870 and the years immediately following, large numbers of people, especially those living in the northern and western states of this country, were reported to be affected with an itch, which was variously called "prairie itch," "winter itch," "swamp itch," etc. It was finally shown that this affection was not due to a parasite, but was due to climatic changes, and aggravated by coarse clothing, cheap soaps, etc. At this time scabies was very little known.

Almost all the scabies that has prevailed in North America has come from Europe, and especially from the large and crowded capitals, where large numbers of people are treated yearly. It is probable that the number of cases treated annually in this country does not equal the number treated in Vienna or Berlin alone. Several factors have contributed to the increase in scabies in this country. In the first place, the increase of immigration has brought large numbers of poorer people to the country, including naturally many cases of this disease; in the

second place, massing together of large numbers of people, as at fairs, etc. One of the earliest causes of the spread of scabies was the War of the Revolution, and proofs of the prevalence of scabies at that time are abundant. In the daily journals of the time were found numerous advertisements of secret remedies and nostrums for the cure of scabies.

He then gives the statistics compiled by the American Dermatological Association from 1878 to 1903. Of 440,000 cases, the total number of cases of scabies is about 16,000. During this period the proportion of scabies to all other skin diseases is about 3%. Beginning with the year 1879, it is clear that the number of cases of scabies increased equally with the increase in immigration up to the year 1883. In the following year the number of cases falls off, due undoubtedly to the falling off in the number of steerage passengers arriving. In 1891 and 1892 immigration again increased and scabies with it. In 1893 there was a marked decline in immigration, whereas there was an increase in the number of cases of scabies reported. This was, it is thought, without question due to the large number of people coming together at the Chicago Fair.

In the year 1898 there was an increase in scabies corresponding to an increase in the number of immigrants. This was also the year of the Spanish War. It is pointed out that the year 1904 has offered a better opportunity for the spread of scabies than any other. There was in the first place the largest immigration ever known, and, second, there was the St. Louis Fair.

Hyde also calls attention to the fact that for the first time in many years scabies is beginning to be seen in private practice. The fact that many of the cases are not so pronounced and occur in the more cleanly classes is the reason why so many general practitioners do not recognize the disease as it exists to-day. In these cases there may be little or no eruption between the fingers or in the axillary regions, or the eruption in these situations may be very slight. Oftentimes, in the case of male patients, a single papule or pustule on the penis or scrotum may be a pathognomonic symptom; or in women about the nipple or umbilicus. Nocturnal itching is, of course, an important and significant symptom. These milder cases are the ones that remain undiscovered for months and even years, during this time causing infection to other people.

Hyde does not look for any general extension of the disease in this country. He thinks that the number of cases will gradually increase beyond any point yet reached, and then there will follow a diminution, the proportion varying a good deal with the amount of immigration.

A NEW FORMULA FOR BATHS, LOTIONS, AND APPLICATIONS WITH OIL OF CADE AND ANTHRASOL.[4]

It has been impossible thus far to overcome entirely certain disadvantages which attend the treatment of skin diseases, especially when the latter affect large surfaces of the body. The application of fatty substances still remains the foundation of external and pharmacological treatment. In spite of the large numbers of old and new preparations and the perfection of the methods of preparation, we possess a large number of valuable substances whose application is more or less disagreeable either on account of color, odor, or damage to the underclothing.

The tar preparations are foremost among these substances as so-called reducing agents, which belong to the most effective and energetic of cutaneous applications. A proper application of tar preparations increases their efficacy very much. Although an ointment is the oldest and simplest form of application, tar may be, under certain circumstances, advantageously applied in the form of glycerolates, pastes, collodion, etc. It has been found extremely difficult to prepare tar baths. It had been the custom, after washing with soap and water, to anoint the skin with one of the usual tar preparations, and then to put the patient in a bath where he would lie a longer or shorter time. Leistikow has recommended coal tar as more effective than that of vegetable origin. Balzer attempted to emulsionize oil of cade with gelatinous potash soap which can be added directly to the bath. Mibelli, seeking to improve Balzer's formulæ, recommends the following: Oil of cade, 67; kolophonium, 11.1; 20% solution of soda, 21.90. In this way a thick, homogeneous mixture of dark brown color is obtained, which is easily mixed with water in any proportion. One hundred gm. of this solution is enough in many cases to make an effective bath. The greatest advantage of this preparation consists in the fact that it can be mixed in still higher concentration and with smaller quantities of water without change.

During the last three months Balzer has often had an opportunity to test the effectiveness of this mixture either as a full bath or as a form of application, and especially with regard to its antipruriginous qualities. In the form of applications in affections of the scalp and of the limbs, especially of the hands, it has marked reducing and keratolytic properties.

Encouraged by these favorable results, he has tried the mixture with another preparation, namely, anthrasol, which has been recently introduced in dermatology on account of its analogies with tar. This may be emulsionized under exactly the same conditions as the tar. In most cases its antipruritic action was extremely quick and lasting. In the form of moist applications in the strength of from 2% to 3%, it gave him very good results in localized chronic eczema. Mibelli records favorable results with moist applications of these preparations in several cases of bullous dermatitis.

X-RAY TREATMENT OF TINEA.[5]

At the French Dermatological Society on Jan. 5, 1905, Sabouraud, Pignot and Noiré gave the results of their work in the treatment of tinea by the x-rays since January, 1905. During the preceding year, 1903, the École Lailler had healed 104 children by the old methods. During

the following year they cured 374 patients. This number included only those patients who were admitted to the hospital; during the same time 212 children were cured who were treated as out-patients, so that the total cured amounted to 586.

They note that tinea can be cured by the x-rays in three months, whereas two years were formerly necessary. (The length of time required for the cure of tinea in France is much longer than that of our own experience in America. Rep.) Many parents who could not undertake the treatment of their children for as long a time as two years are quite ready to give up three months to it. It is also noted that a large amount of public money is saved by the shortening of the cure. Whereas the school formerly supported several colonies of children afflicted with tinea in the provinces, with the new method of treatment that has become no longer necessary.

It has also been possible to heal epidemics of tinea without isolating the healthy from the affected cases; and in a particular epidemic only one case of contagion was observed.

The writers believe that if the schools receive no new scholars without previous examination, tinea will in four or five years have disappeared from Paris, at least so far as epidemics are concerned.

[1] Derm. Zeitschr., January, 1905.
[2] Monats. für Prakt. Derm., Band 40, No. 1.
[3] American Journal of Medical Sciences, March, 1905.
[4] Mibelli: Monatsh. für Prakt Derm., February, 1905.
[5] Annales de Derm. et Syph., January, 1905.

Reports of Societies.

AMERICAN MEDICAL ASSOCIATION.

FIFTY-SIXTH ANNUAL MEETING, HELD AT PORTLAND, ORE., JULY 11, 12, 13 AND 14, 1905.

PROCEEDINGS OF THE SECTION ON PRACTICE OF MEDICINE.

THE first meeting of this section was called to order Tuesday afternoon, July 11, by the chairman, DR. RICHARD C. CABOT of Boston.

DR. WILLIAM FITCH CHENEY of San Francisco, Cali., read a paper on

THE INCIDENCE OF HEART DISEASE IN IN SAN FRANCISCO.

The author attempted to establish the frequency of organic disease of the heart in San Francisco, basing the study presented upon an examination of the records of 3,648 cases observed in the medical clinic of the Cooper Medical College during the past five years. He said that disease of the heart was a very common malady in San Francisco, and among the valvular troubles the form most frequently encountered was mitral regurgitation, following this was aortic regurgitation; third in the list in point of frequency was mitral stenosis; aortics tenosis came fourth, but a long way after the third, being unquestionably a rare affection, at least among the dispensary patients in that city. Myocardial disease was quite commonly met with. Its causal factors were probably the same as those supposed to lie at the foundation of arteriosclerosis. The latter condition was even more often observed than myocarditis.

DR. JAMES J. WALSH, of New York, expressed the belief that the heart lesions which developed during an attack of acute articular rheumatism should be regarded not as purely rheumatic in character but as complications of the original disease. Many of the cases now regarded as of rheumatic origin were really, he thought, septic in character.

DR. W. OPHULS, of San Francisco, Cal., was impressed with the large number of cases of septic endocarditis which were encountered in San Francisco.

DR. CHARLES R. GRANDY, of Norfolk, Va., mentioned his experience with the negroes of the South, saying that it had been rather contrary to the usual teaching relative to the relation of rheumatism and heart disease. In his practice among this class he had found acute rheumatism to be a comparatively rare disease, while valvular diseases of the heart were common. Mitral disease was frequently met with in those who did severe manual labor.

THE SECRET NOSTRUM EVIL.

DR. FRANK BILLINGS, of Chicago, Ill., in a paper on this subject discussed the causes and the proposed remedies for this condition. He said that the most effective remedy for secrecy manifestly was publicity. No movement ever undertaken by the American Medical Association would be so far-reaching in its effects as this one which had been started to free the profession from the blight of proprietary remedies. He advocated holding special society meetings for the purpose of enlightening the profession with reference to the evils of prescribing remedies of unknown composition, and went so far as to advise that no one read any medical journal which contained the advertisement of such remedies.

DR. ALFRED STENGEL, of Philadelphia, Pa., offered the following preamble and resolution:

Whereas, The fact that the medical profession of the United States has too long neglected to recognize the harm to the public, to the members of the profession, and to scientific medicine from the nostrum evil; and,

Whereas, The Board of Trustees of the American Medical Association has created a body known as the Council of Pharmacy and Chemistry, to investigate and pass upon the various non-official medicinal preparations placed upon the market; be it, therefore,

Resolved, That we, individually and collectively, heartily endorse the action of the Board of Trustees, and earnestly urge every physician to give this effort of reform his hearty support.

Resolved, That the reporter of this Section in the House of Delegates be instructed to present these preambles and resolutions to the House of Delegates, with the recommendation of this Section for their endorsement, and that a copy of the same be sent to the president and Secretary of each constituent society of the American Medical Association.

Resolved, That the Board of Trustees of the JOURNAL be requested to effect the removal from its pages of all advertisements of nostrums.

DR. JOHN H. MUSSER of Philadelphia, opened the discussion, and, among other things, stated that skepticism in therapeutics, especially in the use of old-time remedies, was undoubtedly responsible for much of this evil. A definite return to the prescription of old-fashioned remedies would do away with this. In the meantime the movement to lessen the prominence of the nostrum evil and the shame of their advertising must be encouraged in every possible way.

DR. J. J. WALSH, of New York, stated that the low standard of true feeling for medicine in the profession was to blame for the evil. In New York City, where the medical education was not sufficient, statistics showed that over 70% of all prescriptions written contained some nostrum. Careful investigation and

inquiry at drug stores within a month after an agent came around to introduce a new and hitherto unheard-of preparation showed that physicians had begun to prescribe it. He thought the good sense of the profession should be aroused to the enormity of thus selling their birthright as practitioners of medicine to the pharmaceutical quacks for even less than the proverbial mess of pottage.

DR. JAMES T. PRIESTLEY, of Des Moines, Iowa, said that medical students were not properly taught to prescribe and their laxity in taking up with these ready-made prescriptions was due to this.

DR. JOHN A. WITHERSPOON, of Nashville, Tenn., said that the true physician was a medical student all his life. The fact that he had not learned prescription writing before graduation should only make a renewed incentive to learn it after, if he had the true professional spirit. The blame must not be laid on the medical schools, but the men. Nostrum-prescribing narrowed their minds, until at last it was impossible for them to advance in medicine.

DR. KING, of Washington, stated that an evil could not, any more than a plant, be killed by cutting off its head: the root must be reached, medical education must be improved from its practical side. In the post-graduate school diagnosis, pathology, bacteriology were all insisted on. Treatment was scarcely mentioned; hence physicians grasped at the will-o'-the-wisp with the promise in it held out by the oily manufacturing chemist.

DR. A. B. GROSSE, of San Francisco, stated that the battle against nostrums was in full tilt in California, and he was glad to see it disseminated. Unfortunately, even reputable medical journals published the advertisements of nostrum venders, and the unsuspicious reader could not but think that they must have some virtue in them.

DR. T. C. MCCLEAVE, of Berkley, Cal., said that in denouncing or condemning the medical journals that of the Association itself must not be passed over in silence. It also admitted objectionable advertisements to its columns.

DR. CHARLES G. STOCKTON, of Buffalo, stated that publicity would be of the greatest help in the struggle with nostrums. The fact that names were mentioned publicly, as in Dr. Billings' paper, must of necessity result in good. The more complete the exposure, the more would the profession realize the fraud.

These preambles and resolutions were referred to the House of Delegates, and were concurred in at a subsequent session by that body.

EFFECTS OF THE INHALATION OF THE FUMES OF NITRIC ACID.

DRS. J. N. HALL and C. E. COOPER, of Denver, Col., contributed a joint paper on this subject, in which they reported the clinical findings in twenty cases of poisoning by the inhalation of the fumes of nitric acid at a fire in Denver. The patients were firemen, called to put out a fire due to the breakage of a carboy of stray nitric acid. The acid was soaked up with sawdust which oxidized very rapidly, and burst into flames in many places. For this the firemen were summoned and found a thick irritating smoke, evidently due to a combination of acid fumes with the burning sawdust. The acid was very concentrated, over 38% in strength, and contained no noteworthy proportion of nitrous acid and no sulphur impurities.

The men were overcome much more rapidly than ordinarily by smoke and there was an intense feeling of irritation of the respiratory passages on first going near the flames and then immediately after coming out from the first effects of the collapse incident to exposure to the fumes. The men were taken immediately to the hospital, but thought no more of their condition than if they had been overcome by smoke, which was a common experience with them. All of them asked and were permitted to return to their homes after a few hours. All of them, however, without exception, were brought back to the hospital within from six to twenty-four hours, because of severe irritative symptoms in the respiratory mucous membrane, and because of the development of intense congestion of the lungs. After their return to the hospital all suffered from vomiting and some signs of collapse, and all of them complained of sharp pains on breathing as well as difficulty of respiration. All of the victims suffered from pleuritic pains, which on investigation proved to be accompanied by pleuritic friction sounds, so that the pleura was evidently affected. After the signs of active congestion passed areas of consolidation could be demonstrated here and there. This bronchopneumonia proved of slow course, and very prostrating in its tendency. The general symptoms did not seem to be different from those noted after the inhalation of chlorine or other irritant gases. Four of the cases proved fatal, one not long after the accident, three others toward the end of the month afterward. These three had recovered apparently from their bronchopneumonia and then suffered a fatal relapse. At autopsy the evidence of bronchopneumonia was clear.

The treatment, as outlined by the authors, consisted in stimulation, the administration of oxygen when indicated, atropine for the edematous infiltration, vigorous counter-irritation, with eliminative and supportive measures. The authors maintained that these procedures offered the greatest hope of success in the treatment of those cases that were seen in the early stages.

DR. W. H. NEILSON, of Milwaukee, Wis., stated that two years ago a similar accident occured in Milwaukee and the symptoms ran a similar course. All of the men went to their homes after a couple of hours and then had to return later on for treatment. Signs were those of intense congestion of the lungs, although at first there seemed to be only a superficial though troublesome irritation of the respiratory mucous membrane. All of these cases improved very slowly and the return to complete health was long-delayed. Finally, all of them had to be sent to Texas to recuperate. On the way one of them, discouraged by the slow progress of his case, committed suicide.

DR. GEORGE W. MCCASKEY, of Fort Wayne, Ind., pointed out that some of the prostration and general symptoms, as well as the failure to react, seemed in these cases to be due to the direct absorption of toxic material into the blood during inhalation. This should be an indication for treatment in such cases. The vomiting seemed to have been nature's protective effort to throw off some of this absorbed material, which could not escape through the congested lungs.

DR. JOHN H. MUSSER, of Philadelphia, thought the most interesting phase of Dr. Hall's work was undoubtedly the demonstration of the possibility of the production of bronchopneumonia by direct severe irritation. In recent years only the infectious factors in the etiology of bronchopneumonia had been considered to the exclusion of other important sources of this inflammatory reaction. It was for the careful study of this subject in recent papers that Dr. Hall was to be especially commended.

DR. HALL, in closing the discussion, stated that there were some symptoms in the cases which were extremely difficult to explain. The vomiting scarcely seemed to be due to poison, however, since it did not occur at once, but in from twelve to twenty-four hours

or more after the exposure. It would seem to him as though some broken-down tissue material were being absorbed which was giving rise to the prostration and vomiting. Poison acted at once; all the men went home and then, later, had to come back to the hospital.

SYMPOSIUM ON NEPHRITIS.

Dr. W. T. Councilman, of Boston, discussed the

GENERAL CONSIDERATIONS ON THE PATHOLOGY OF THE KIDNEY.

He pointed out that the principal anomalies were chiefly those of position. In the normal organ there was great differentiation of tissue and function. There was marked capacity for repair and little capacity for perfect regeneration. There was considerable impairment of structure in old age, consisting in destruction and degeneration of the secreting tissue, accompanied by increase of connective tissue. The bacterial infections of the kidney did not differ materially from those produced elsewhere. The most common group of renal diseases were those produced by soluble toxic substances, and by disorders of the circulation. Interstitial change in the kidney was secondary to injury of the parenchyma. Among the most important lesions of the kidney were those which affected the glomeruli alone or principally. Such affections might be acute, subacute or chronic. It was possible to make broad anatomical classification. The future study of the diseases of the kidney should be along clinical and experimental lines.

ALBUMINURIA IN NEPHRITIS AND BRIGHT'S DISEASE.

Dr. Alfred Stengel, of Philadelphia, in a paper with this title, pointed out the necessity of distinguishing nephritis in the pathological sense from nephritis in the chemical sense, which was the Bright's disease of ordinary conversation. Much of the chronic interstitial nephritis that was due to arterial conditions must not be considered as true Bright's disease; the kidney symptoms were indeed a local manifestation of the arterial condition, consequently all of these cases were eliminated by the author in his study of the relationship of albumin to Bright's disease. The records of 581 cases were analyzed, and of these, 107 cases showed albuminuria, so there was no true Bright's disease. They included such conditions as diabetes, pregnancy, the albuinuria of adolescence, and of the terminal stages of various affections. In these circumstances the albumin present is an expression of other diseases rather than of nephritis. In over 200 cases of true nephritis there was no albumin present at any time while the patient was under observation. Eleven of these cases showed the presence of casts. The test used was that by heat and nitric acid, and all of the testing was done by one person. This test was not as delicate as some of the other tests employed, but it had the decided advantage of not reacting on other substances besides albumin, nor to such small amounts of albumin as constitute the presence of this pathological material.

As to albuminuria without Bright's disease, this was observed in a large proportion of cases, but the albumin was never in large quantity, and it was usually said to exist only in traces. Another prominent feature was that it was unusually fluctuating and never permanently present. There were, however, some exceptions to these rules. Occasionally albumin was present in quite large quantities, without apparently having any pathological significance. One young woman presented for two years a large albuminuria; the large amount of albumin was present in the morning and never at any other time. She was warned of the necessity of exercising care with regard to every detail of life. She married and was warned with regard to the dangers of pregnancy in the presence of her kidney condition. After a time she became pregnant, but her pregnancy did not seem to have any deleterious influence upon her kidney condition. No eclampsia developed, and no signs of any serious nephritic complications. Her labor was without incident. She had three children altogether, and at the present time there was no trace of albuminuria. In contradistinction to this fluctuating albuminuria was the constancy and uniformity of the albumin present in Bright's disease.

Nearly all the infectious diseases were accompanied by a distinct amount of albumin in the urine. Among those noted as producing this effect were such simple infections as tonsilitis, erysipelas, acute rheumatism, gonorrheal rheumatism, and all of the infectious diseases accompanied by fever. In 290 cases of typhoid fever, 83 showed the presence of a distinct amount of albumin in the urine. It would seem as though the waste of tissue during febrile conditions gave rise to substances which, passing through the kidney, irritated it sufficiently to allow the escape of albumin, or that albuminous material was somewhat absorbed and then excreted. In practically all advanced cases of cardiac disease albumin was present in the urine. In 154 cases in which cardio-vascular changes were present, 81 had albumin and 72 none. The urine was variable in cardiac disease in content of albumin, but this corresponded, as a rule, to the cardiac sufficiency. When small amounts of urine were passed and the urine was rather concentrated considerable albumin was likely to be present. On the contrary, when cardiac sufficiency had been established and the urine had become normal in amount, then the amount of albumin usually descreased. This ratio could be observed in nearly all cases. Dr. Stengel had observed in most of the cases of secondary syphilis under his care and among the records of the medical service of the University of Pennsylvania Hospital that albuminuria was quite common during secondary syphilis. He had few opportunities for observation in regard to this disease, but considered an investigation of it from this standpoint would furnish important information. He was not sure that the albuminuria present was due to the secondary syphilis itself, or whether it should not rather be attributed to the too frequent use of mercury in the disease. Certain it was that in most cases, if mercury was employed in large doses, it proved an irritant to the kidney, causing congestion and leading to the presence of albumin in the urine.

Dr. Stengel considered that while in general albumin and casts in the urine were signs of kidney disease, they might occur without any affection of the kidneys. There were certain inflammatory conditions of the kidneys of very passing nature which might cause albumin to be present in considerable quantities. When albumin was present in considerable quantities and constantly, then it had a definite patholgical significance. The presence of a trace of albumin had sometimes been exaggerated into a pathognomonic symptom of Bright's disease. The author did not wish to lessen the value of urinary examinations, but considered that they must always be supplemented by careful clinical observation of other organs throughout the body. A larger view must be taken of the affections, and especially the importance of vascular conditions must be realized, if there was to be any proper idea obtained of the kidney condition and of its relation to the general health.

(To be continued.)

The Alvarenga prize, College of Physicians of Philadelphia, has been awarded to Dr. Chalmers Watson of Edinburgh.

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OPSONIC POWER AND OPSONINS.

The progress of research is so rapid that no surprise need be occasioned by the addition of new terms to our nomenclature. One of the more recent is opsonin, first used by an English investigator, Dr. Wright, in connection with certain studies on immunity. A recent number of the *British Medical Journal* prints a paper by Dr. R. H. Urwick, in which he describes succinctly what is meant by opsonic power in relation to persons suffering from tuberculosis. He draws attention to the fact that there are two recognized methods of ridding the body of bacteria or their effects, the first by protective substances produced by the organism and the second by increasing the production of such substances by injections. Substances which enter into destructive chemical combination with bacteria are found in all human blood and those which are supposed to enter into the combination with bacilli are agglutinins and opsonins. The agglutinins have now been studied for a considerable time and are recognized as those substances which immobilize and conglomerate bacilli through chemical combinations. Opsinins, derived from a word meaning "to prepare food for," are substances which so modify the bacilli as to render them an easy prey for the phagocytes. These opsonins, according to Wright and Douglas, are contained in the serum or plasma of the blood; they lose their power when heated to 60° or 65° C. for ten or fifteen minutes. They effect the modification of the bacilli but do not exert a direct stimulating effect on the phagocytes. The attempt has been made to estimate the opsonins or the opsonic power in the blood, and these results have been used in the study of certain pathological conditions, particularly tuberculosis.

The average number of tubercle bacilli ingested by each polynuclear white cell may be calculated and the figure obtained is known as the phagocytic index. It appears from these studies that the opsonic power is approximately the same in all healthy people and that in healthy people it varies very slightly, if at all, from day to day. Dr. Urwick has applied the method in a number of cases of tuberculosis of various sorts in which he found that there were wide variations in the opsonic power during the course of the disease, but that apparently it followed no obvious rule. By the inoculation of tuberculin it was found that following the inoculation there is a negative phase during which opsonic power is decreased. This is followed by a positive phase during which it is increased. If the inoculation be successful, the opsonic power is permanently raised. Dr. Urwick insists as one of the results of his observation on the importance of frequent examination of the opsonic power in cases which are under treatment by inoculation. The blood should be carefully examined and the dose of tuberculin and its frequency of administration be based upon the results of these examinations. When for any reason examinations cannot be made, very small doses should be employed. The most favorable patients for treatment are those suffering from surgical tuberculosis with low opsonic power which can be raised by inoculation. In general, a low opsonic power is supposed to be due to an inherent insufficiency or exhaustion in the machinery of immunization. A high power is due to an active response by the mechanism of immunization to the stimulus of infection.

This line of research is clearly in its infancy and what may be expected from its further prosecution time must show. It clearly represents another effort toward the more precise statement of what takes place in immunity, and as such deserves the careful consideration of scientific men. We confess to a certain regret, however, that new terms must be used before their ultimate serviceableness and the usefulness of what they represent is demonstrated. It is possible, however, that the term "opsonin" may justify its existence through more extended researches than have yet come into our hands.

THE DISCOMFORTS OF TRAVEL IN SUMMER.

The railroad companies no doubt in general seek to provide for the comfort as well as the safety of their patrons. That they fall short of this aim, particularly in summer, is evident to

the most careless observer. After a hot day in the city it is discouraging to seek the suburbs by entering a car which is many degrees hotter than the surrounding atmosphere. It would seem not too much to ask that the railroad companies take measures to cool their cars before backing them into the station. If it is impossible to provide covered sheds for cars about to be used, a vigorous douching with cold water would do something to reduce the extraordinary heat which they attain by standing in the sun. Some such remedy, we believe, has been suggested, but that the authorities are slow to act upon it is evident on any hot day. Considering the very vigorous rivalry between the steam and electric roads in the neighborhood of large cities, and the apparent desire on the part of the railroads to maintain their patronage, it appears to the onlooker that greater attention to the comfort of passengers might accomplish as much as reduced fares. For obvious reasons the railways cannot supply open cars, and all the more for this reason they should do what lies in their power, merely as a matter of policy, to make their cars as comfortable as possible.

A more flagrant omission, however, is the complete failure of railroad companies to provide cars fitted with cane seats in place of the inevitable plush, which may be endured in winter but at times is insufferable in summer. In the modern train on a thoroughly hot day the most uncomfortable spot is usually the drawing-room or sleeping car, with its wealth of ornate decoration and unnecessary upholstery. More comfortable is the ordinary coach which, however, still does not escape the hot plush seats. The most comfortable is the smoking car, which occasionally at least, has seats which are both clean and cool. This is an apparent inversion of what one might naturally expect, but from much personal experience we believe it is no exaggeration of the fact. It is hard to see why the ordinary passenger coaches, and at least some of the drawing-room cars, should not be provided with clean, comfortable, rattan seats, which would hold neither dust nor heat. From the hygienic side, also, it will not be questioned that plush is not conducive to health. It collects and retains dust as a simpler form of upholstery would not do, and in every way does not reach the standard which modern sanitary ideas have established. It is announced that at the coming meeting of the American Public Health Association one of the subjects for discussion is to be car sanitation. No doubt the phase of the question to which we have alluded will be taken up, and the weight of authority which this association has be cast into the scale in favor of cars which will be both more sanitary and far more comfortable than the present variety.

ANOTHER METHOD OF TREATING TUBERCULOSIS.

The ingenuity which has been exercised in finding new methods for the treatment of tuberculosis finds another exemplification in the plan for an Arctic sanatorium alluded to in the current number of the *Medical Record* and discussed at greater length in the Washington *Medical Annals*. Dr. Sohon of Washington appears to have been the originator of the scheme. He has had experience in far northern regions with Peary, and while there was impressed with the possibilities of these regions in the treatment of tuberculosis. In favor of his views it has been shown that the natives of northern Greenland do not suffer from tuberculosis, and that septic conditions generally do well in extremely cold climates. The reports of various Arctic travelers bear out the opinion that very many of the diseases of more temperate climates do not exist, no doubt for the reason that the bacteria which directly or indirectly produce them are not indigenous in the extreme north. It, therefore, follows that many of the complications of tuberculosis, which oftentimes hasten the end, if not in themselves producing it, might be wholly obviated by a residence in these otherwise inhospitable countries. During the long day of the Arctic Zone the fluctuations in temperature are relatively small and the stimulus which a cool atmosphere would give is held to be conducive to the amelioration of tuberculous conditions. The natural difficulties in the way of any such plan, carried out on a large scale, are evident. There are no ready means of communication; the life could scarcely be other than exceedingly rough and full of somewhat unnecessary hardships; the wide separation from friends; and the depressing effect on many persons of such a journey in search of health must all be taken into consideration. In spite of these and many other drawbacks which might be mentioned, Dr. Sohon is enthusiastic and urges that a hospital ship be provided for conveying patients desirous of making a trip to the proposed northern health resort. We question whether his ideas will receive wide recognition, but, on the other

hand, we can easily see in individual cases the usefulness of the treatment which he suggests and the reasons for his faith in its efficacy.

MEDICAL NOTES.

Memorial to Professor Finsen.— Money for a Finsen memorial has been collected in Vienna and a surplus of about two hundred dollars will be used to enlarge the laboratory and further equip the hospital for lupus.

Fire at the Medical School, University of Pennsylvania.— Through a fire which recently occurred in one of the buildings of the Medical School of the University of Pennsylvania loss to the extent of about $40,000 was occasioned. Many microscopes and other instruments were destroyed. The fire occurred in the anatomical and surgical departments.

Mississippi Valley Medical Association. — At the next meeting of the Mississippi Valley Medical Association, to be held at Indianapolis, Ind., Oct. 10, 11, 12, the annual addresses will be delivered by Dr. Arthur R. Edwards of Chicago and Dr. W. D. Haggard of Nashville, Tenn.

Dr. Edwards has taken for the subject of his address, "Certain Phases of Uremia, Their Diagnosis and Treatment" and Dr. Haggard will discuss in his address, "The Present Status of Surgery of the Stomach." In addition to these addresses there will be the annual address of the President, Dr. Bransford Lewis of St. Louis.

Mortality of Michigan During July, 1905. — The total number of deaths returned to the Department of State for the month of July was 2,482, an increase of 88 over June. The death-rate was 11.5 per 1,000 population, as compared with 11.4 for the preceding month. By ages there were 506 deaths of infants under 1 year, 166 deaths of children aged one to four years, and 678 deaths of elderly persons aged sixty-five years and over. Important causes of death were as follows: tuberculosis of lungs, 161, other forms of tuberculosis, 35; typhoid fever, 45; diptheria and croup, 32; measles, 10; whooping cough, 15; pneumonia, 65; diarrheal diseases under two years, 204; cancer, 143; accidents and violence, 214; of which number 62 were deaths from drowning. There were 4 deaths from smallpox, 2 in the city of Grand Rapids, 1 in the city of Negaunee, and 1 in the city of Muskegon. There were 8 deaths reported from tetanus, 7 of which gave the primary cause as the deadly toy pistol. This number exceeds by 3 the number reported from the same cause for the corresponding month of 1904. There were 2 deaths reported from rabies.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, Aug. 30, 1905, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 13, scarlatina 7, typhoid fever 37, measles 11, tuberculosis 47, smallpox 0.

The death-rate of the reported deaths for the week ending Aug. 30, 1905, was 19.01.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, Aug. 26, 1905, is 237, against 152 the corresponding week of last year, showing an increase of 85 deaths, and making the death-rate for the week 19.68. Of this number 123 were males and 114 were females; 235 were white and 2 colored; 154 were born in the United States, 76 in foreign countries, and 7 unknown; 45 were of American parentage, 163 of foreign parentage, and 29 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 20 cases and 1 death; scarlatina, 5 cases and no death; typhoid fever, 25 cases and 3 deaths; measles, 9 cases and 1 death; tuberculosis, 45 cases and 21 deaths; smallpox, no cases and no deaths. The deaths from pneumonia were 10, whooping cough, 0, heart disease 27, bronchitis 3, and marasmus 10. There were 10 deaths from violent causes. The number of children who died under one year was 83; the number under five years, 100. The number of persons who died over sixty years of age was 43. The deaths in public institutions were 82.

There were three cases and three deaths reported from cerebrospinal meningitis during the week.

NEW YORK.

Typhoid Fever. — In the Borough of Manhattan there were reported 92 cases of typhoid fever in the second week of August, as against 41 in the first week of the month, and 38 in the corresponding week of August, 1904. In Brooklyn there were 149 cases reported, as against 67 in the first week of August and 32 in the corresponding week of last year. Believing that a considerable number of the typhoid cases in Brooklyn were due to bathing in water which was contaminated from sewers emptying into the harbor, the Health Department has forbidden

sea-bathing at Bath Beach, Fort Hamilton and other points, and invoked the aid of the police to warn bathers of the risk incurred.

BACTERIOLOGICAL LABORATORY FOR HEALTH DEPARTMENT. — The Health Department is about opening a new bacteriological laboratory, which adjoins the Willard Parker Hospital for contagious diseases and which has been in process of construction for a long time. New York was the first city in America to establish a laboratory of this character, and the institution has now developed from a single "back room" to an admirably equipped six-story building. Every floor of the new structure has been arranged for some special department of laboratory work, and every known modern appliance for research has been brought into requisition. This satisfactory result is largely due to the efforts of Dr. H. M. Biggs, at present medical officer of the Health Department, who, then in the pathological service of the Department, in the eighties and early nineties urged that bacteriological diagnosis was the only certain method of identifying certain diseases. He was sent to Berlin to study especially the results of the employment of diphtheria antitoxin in Germany, and, despite cramped facilities, the bacteriology of diphtheria and tuberculosis was taken up. In 1895 the Department began the free examination of specimens from suspected cases of diphtheria and the free distribution of diphtheritic antitoxin. This, from the first, greatly reduced the mortality from the disease. While the mortality from diphtheria was 158.4 per hundred thousand of the population in 1894, in 1896 this was reduced to 91.2 and the statistical records show that the death-rate from the disease has been going down proportionately ever since. During the past few years the department laboratory has also carried on investigations in typhoid fever, rabies, dysentery, tetanus, bubonic plague, cerebrospinal meningitis and other diseases, has made gratifying progress in methods of disinfection, and has prepared its own material for vaccinations and inoculation with antitoxins. At the head of the laboratory is Dr. William H. Park, who has long been recognized as a leading authority in bacteriological research. It should not be forgotten, either, that the Health Department has, in addition, for a number of years provided for the free examination of sputum in all cases of suspected tuberculosis, and more recently has established clinics of its own for infectious pulmonary diseases in both the boroughs of Manhattan and Brooklyn.

Miscellany.

OCCUPATION AND PHYSIOGNOMY.

ACCORDING to the *Lancet* the medical man knows the value of studying the patient's face if he would diagnose thoroughly his patient's condition, and occupation, like disease, has an undoubted influence on the physiognomy. In ordinary conversation persons will be found sometimes amusing themselves by guessing at the probable occupation of a given person and an answer not far from the truth is very often forthcoming, based entirely upon the physiognomy of that person. There are, of course, certain conventionalities in regard to dress and toilet which materially help the diagnosis, but associated with the various occupations in life there is undoubtedly a type of face which more or less betrays the calling of its owner. Medical men, especially in hospital practice, find acquaintance with these types valuable. They may not be able, with the shrewdness of Sherlock Holmes or of his still acuter brother, to read a man's past, present, and future by a glance at him in the street, but they are able to gauge with considerable accuracy how far the history of the case, as given by the patient, is a truthful one, and how far it fits with his probable occupation in life. Calling must certainly have some influence over the physiognomy of the cabman, the omnibus driver, the butler, or the groom; each frequently possesses a type of face which wears so characteristic an expression as to make it not difficult to identify the vocation accompanying it. We speak also of the legal face, the scientific face, the ecclesiastical face, the musical face and artistic face, the dramatic face, and the military face. This is merely a broad classification but we disbelieve in the claims of the keen observer to an ability to differentiate to a finer degree. We have heard of hospital physicians who claimed to be able to say from a glance at the face that this or that man was a butcher, a grocer, a bank clerk, a lawyer's clerk, a commercial traveler, a stockbroker, a wine merchant, and so on. We think that the fame of these medical men as rough-and-ready detectives has been largely manufactured for them by enthusiastic clinical clerks; but that many medical men do possess great insight into the occupations of those who come before them is a truism. The question is often debated whether physiognomy is a growth of vocation or whether it shows that the vocation chosen is in accordance with the particular capacity and ability of the person to whom it belongs. In other words, if the barrister does not show the "legal face," the aspiring priest the "ecclesiastical face," the medical student the "physicianly face," the soldier the "military face," and so on, is that a sign that they have mistaken their calling? Is the man who "doesn't look a bit like a doctor" likely to fail because his physiognomic qualification is wanting? Or will he, whatever his original features, gradually come to acquire the type of the profession to which he

belongs. The answer to the question is, of course, that both theories are right. A certain kind of face, the so-called scientific face, is so often seen among modern medical students as to prove that the owner of that cast of countenance is likely to adopt medicine as a career. Conversely, whatever the original cast of features a medical man may have possessed, the anxious, delicate, and absorbing work of medical practice will put a stamp upon them.

Correspondence.

SUMMER DIARRHEAS OF INFANTS.

New York, Aug. 21, 1905.

Mr. Editor: In your issue of Sept. 24, 1904, there appeared what purported to be a review of my booklet "The Summer Diarrheas of Infants," which had but just then appeared. Therein the writer after stating that though it contained a modicum of truth, he could not agree with the author, either as to the premises or the conclusions, continues thus: "The arguments are ingenious, but will not bear very close analysis. The book is rather amusing to one familiar with the subject, but may, we fear, do harm if it falls into the hands of students or those not well grounded in medicine."

It is, of course, the indisputable privilege of the reviewer to disagree with the author reviewed as much and as far as he pleases. It is also his privilege to say what he pleases, whether well founded or not, of any book he may be called upon to review. And still I must say that I was rather disappointed to find that a critic living in the city of Boston, renowned as the home of culture, enlightenment and high morality, a medical critic at that, of a city wherein the code of ethics is the law for the disciples of Æsculapius, was of the same clay as so many others of less beneficent centers, who did not hesitate to make a statement so detrimental to a book and to the reputation of the author without at least some show of substantiation therefor.

It is, indeed, an easy matter to write down in a general way "his arguments will not bear close analysis." To assume the smile of superiority and say "To us wise men so profoundly versed in all the intricacies of the topic the work appears decidedly humorous," so easy indeed that there is a German saying (I have forgotten the exact words) that a critic need know absolutely nothing of the subject of the book he is called upon to criticise; he need only confine himself to general platitudes (as in the review referred to) which fit any subject from algebra to occultism, and put on a wise mien.

However, it is not my purpose here to address myself to the reviewer — I have no quarrel with him — but to *the students of medicine and the practitioners who may not be so well grounded therein*, to call their attention to a few authoritative utterances. I mean utterances of pediatrists on the subject of summer diarrheas that have been made since said review was written.

Already the gentlemen who were conducting the experiments for the Rockefeller Institute of Research stated in their report that in the greater number of the cases of summer diarrhea that came under their observation the trouble was of a dyspeptic character. In the *Journal of the American Medical Association*, November, 1904, in a lengthy article, the same statement is made, that almost all of the cases of summer diarrhea are of a dyspeptic character — a dyspeptic diarrhea.

Now, *that is the position I took in the booklet*, only I went a step farther. It is now recognized by all men familiar with the diseases of the digestive tract that the term "dypepsia" does not mean anything definite, and that it can be applied, and in fact is applied, to the most varied forms of gastric derangement from nervous and secondary indigestion to cirrhosis of the stomach. It means nothing concrete and therefore does not furnish any therapeutic indication. In my study of the subject I endeavored to discover the nature of this dyspepsia, so that I and the others whom I was called upon to instruct might have a safe and certain guide for our therapeutic intervention and thus be preserved from that slough of uncertainty that has characterized the treatment of summer complaint. Furthermore, in the body of the work and in the appendix I have shown that I was in full accord in my conclusions as to the nature of the dyspepsia with such eminent and renowned pediatrists as A. Jacobi and J. Lewis Smith, as shown by their therapeutics.

I presume, then, that it will be granted that at least herein I have not concealed dangers to the student and the unwary practitioner.

In the "Archives of Pediatrics" for June, 1905, there appeared an article entitled "Etiology and Classification of the Summer Diarrheas in Infancy," by Charles Hunter Dunn, assistant in pediatrics, Harvard Medical School, assistant physician to the Children's Hospital and to the Thomas Morgan Rotch, Jr. Memorial Hospital for Infants, Boston. In conclusion 5 of that article Dr. Dunn says: "The chief or primary cause of all of the above types is the increased heat of the weather occurring during the summer months, etc. The name 'thermic diarrhea' can be given to the entire group." Now this etiology, which is the old one and dates rather far back, as I have shown, is *the one I maintain* in my booklet. Here, also, I went a step farther: In the first place, I maintained that the etiological factor was the heat of the season, intensified as it is a thousandfold in the dwellings of the poor (and of which most of the gentlemen who have written and still write upon this subject have no conception for the reason that they have not gone and do not go into these dwellings, and saw and see their little patients only in the hospitals and dispensaries); then, the relation of the heat to the dyspepsia, how they stand to each other in the relation of cause and effect (something which no one will dare deny), and, lastly, that which was of greatest importance, the matter of treatment, a method which would do for the infants of the poor, roasting in their tenements, what the rich accomplish for their infants by leaving the city for the mountains, for the farm, for the seashore, namely, obviate the deleterious influence of the etiological factor which we have with us the whole summer and which is magnified manyfold in the housings of the poor, as described by me in this book from personal observation.

The value of this method — simple, inexpensive (not requiring the attendance of a physician) and readily carried out by the most ignorant of mothers, *the use of cool water* in one way or another, as described in the book referred to, is indisputable and can be testified to by any number of the intelligent laity. As to its safety, nay, its healthfulness, we have the testimony of the most prominent physicians and hydriatists of the world.

That some such method or plan of treatment and prevention of this great scourge of infantile life is a great desideratum is shown by the work of St. John's Guild of New York (already referred to in my book) and that of the Boston Floating Hospital, an extended description of which appeared in the "Annals of Gynecology and Pediatry," July, 1904. That my plan is superior even to these wonder-workers is self-evident; it is carried on continuously day after day throughout the torrid season, in the very homes of the poor and not occasionally as in these beneficent institutions, and then very often at great inconvenience to the poor mother, with a house full of children.

That the arguments are necessarily correct and logical and *will bear* close analysis is proven by this, that already ten years ago I arrived at the conclusions which this latter generation of pediatrists is now setting forth. There can be nothing dangerous, therefore, in this little book when confirmation of all that is maintained therein comes from so many different quarters.

Without boasting, and those who know me will vouch for it that it is not one of my failings, I can truly say that the reader will find in my booklet a clearer and truer exposition of the subject of summer diarrheas than in any treatise of pediatrics now extant.

E. pur si muove.

Truly yours,

H. Illoway, M.D.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, AUG 19, 1905.

CITIES.	Population*	Reported deaths in each.	Deaths under five years.	Percentage of deaths from					
				Infectious diseases.	Acute lung diseases.	Diphtheria and croup.	Typhoid Fever.	Cerebro-spinal Menin-gitis.
New York . .	3,908,644	1,281	571	39.34	6.94	1.50	1.97	1.96
Chicago . . .	1,990,780	577	234	40.03	2.77	.86	1.56	—
Philadelphia	1,407,988	438	158	34.70	4.56	.68	2.51	.45
St. Louis . .	633,606	—	—	—	—	—	—	—
Baltimore . .	542,229	191	76	37.17	2.09	.52	3.66	—
Cleveland . .	444,351	—	—	—	—	—	—	—
Buffalo . . .	400,645	—	—	—	—	—	—	—
Pittsburg . .	362,403	—	—	—	—	—	—	—
Cincinnati . .	338,377	—	—	—	—	—	—	—
Milwaukee . .	325,900	—	—	—	—	—	—	—
Washington .	300,776	—	—	—	—	—	—	—
Providence . .	196,744	62	27	48.39	3.22	1.61	—	—
Boston . . .	617,950	236	93	39.28	7.18	1.36	1.28	.88
Worcester . .	127,963	45	25	42.20	2.22	—	8.89	2.22
Fall River . .	105,687	51	31	56.86	1.76	—	1.76	—
Cambridge . .	97,436	23	11	21.70	13.04	—	—	—
Lowell . . .	94,845	45	17	37.77	6.67	—	2.22	—
Lynn	77,025	26	12	30.77	—	—	—	—
New Bedford	74,221	28	16	57.13	—	—	—	—
Springfield .	73,484	26	9	30.76	3.84	—	3.84	—
Lawrence . .	69,930	29	14	41.37	3.44	—	—	—
Somerville .	68,188	10	4	50.00	—	—	—	—
Holyoke . .	49,124	11	8	54.54	9.09	—	—	—
Brockton . .	47,782	16	5	18.75	—	—	—	—
Malden . . .	37,980	8	5	37.50	—	—	—	—
Haverhill . .	37,818	14	5	35.71	—	—	—	7.14
Salem	37,806	18	10	—	—	—	—	—
Chelsea . .	37,577	14	6	7.14	—	—	7.14	—
Newton . . .	36,694	12	—	8.33	8.33	—	—	—
Fitchburg . .	33,017	11	6	45.45	—	—	—	—
Taunton . . .	30,902	—	—	—	—	—	—	—
Everett . . .	29,108	7	5	14.29	14.29	—	—	—
Quincy . . .	28,067	10	5	50.00	10.00	—	10.00	—
Waltham . .	26,239	10	4	20.00	—	—	—	—
Gloucester .	26,006	—	—	—	—	—	—	—
Pittsfield . .	25,000	9	3	33.33	—	—	—	—
Brookline . .	23,494	3	—	—	—	—	—	—
North Adams	23,125	9	4	—	—	—	—	—
Chicopee . .	20,187	10	7	60.00	—	—	—	—
Northampton	19,942	9	5	22.22	—	—	—	—
Medford . .	19,638	3	1	—	—	—	—	—
Beverly . . .	15,222	7	3	—	—	—	—	—
Newburyport	14,678	6	2	33.33	16.67	—	—	—
Hyde Park .	14,402	2	2	—	—	—	—	—
Woburn . . .	14,401	5	2	80.00	—	—	—	—
Melrose . . .	14,294	4	—	25.00	—	—	—	—
Leominster .	14,290	1	—	50.00	—	—	50.00	—
Marlboro . .	14,073	3	—	—	33.33	—	—	—
Westfield . .	13,609	2	1	—	—	—	—	—
Clinton . . .	13,105	7	3	14.29	—	—	14.29	—
Peabody . .	13,097	—	—	—	—	—	—	—
Attleboro . .	13,702	—	—	—	—	—	—	—
Revere . . .	13,647	5	2	40.00	—	—	—	—
Adams . . .	13,482	—	—	—	—	—	—	—
Milford . . .	12,105	—	—	—	—	—	—	—
Gardner . . .	11,981	4	4	50.00	—	—	—	—
Weymouth . .	11,585	4	—	—	—	—	—	—
Framingham	11,549	—	—	—	—	—	—	—
Watertown . .	11,302	2	2	100.00	—	—	—	—
Plymouth . .	11,118	—	—	—	—	—	—	—
Southbridge	10,947	11	7	72.72	—	—	—	—

Those of Massachusetts, with the exception of Boston, are from advance sheets of the Official Census of 1905, and are subject to correction. The population of Boston is based on estimate. Correct figures will be furnished as soon as obtained.

Deaths reported, 3,295; under five years of age, 1,406; principal infectious diseases (smallpox, measles, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 1,361; acute lung diseases 164, consumption 286, scarlet fever 11, whooping cough 31, cerebrospinal meningitis 22, smallpox 2, erysipelas 2, puerperal fever 15, measles 7, typhoid fever 67, diarrheal diseases 786, diphtheria and croup 32.

From whooping cough, New York 12, Chicago 8, Philadelphia 4, Baltimore 1, Providence 2, Boston 2, Fall River 1, Pittsfield 1. From scarlet fever, New York 3, Chicago 7, Somerville 1. From cerebrospinal meningitis, New York 16, Philadelphia 2, Boston 2, Worcester 1, Haverhill 1. From erysipelas, Chicago 1, Philadelphia 1. From smallpox, Chicago 2. From typhoid fever, New York 25, Chicago 9, Philadelphia 11, Baltimore 7, Boston 3, Worcester 4, Fall River 2, Lowell, Springfield, Chelsea, Quincy, Clinton and Leominster, 1 each.

In the seventy-six great towns of England and Wales, with an estimated population of 15,609,377, for the week ending Aug. 12, 1905, the death-rate was 17.5. Deaths reported 5,226; acute diseases of the respiratory organs (London) 46, whooping cough 77, diphtheria 47, measles 70, smallpox 0, scarlet fever 35.

The death-rate ranged from 5.0 in Hornsey to 38.4 in Rhondda*; London 17.3, West Ham 23.5, Brighton 11.1, Southampton 13.2, Plymouth 17.5, Bristol 10.3, Birmingham 17.1, Leicester 16.5, Nottingham 14.9, Birkenhead 24.7, Liverpool 21.9, Wigan 28.3, Bolton 14.3, Manchester 21.9, Salford 17.3, Halifax 9.6, Bradford 14.9, Leeds 18.4, Hull 20.4, Sheffield 25.5, Newcastle-on-Tyne 20.9, Cardiff 13.6, Merthyr Tydfil 26.1, Kings Norton 6.7.

* 39 deaths in Rhondda were from injuries received in the recent mine explosion, thereby increasing the death-rate from 22.1.

METEOROLOGICAL RECORD.

For the week ending Aug 19, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

DATE	Barometer.	Thermometer.			Relative humidity.			Direction of wind.		Velocity of wind.		We'th'r *		Rainfall in inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A.M.	8.00 P.M.	Daily mean.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	
S. . 13	29.98	74	83	64	77	40	58	N W	N	8	7	O.	C.	.0
M. . 14	30.10	64	69	60	68	66	67	N	E	19	14	C.	C.	.0
T. . 15	29.90	69	83	54	64	86	75	S	E N E	10	18	F.	R.	.48
W. . 16	29.86	56	58	54	94	78	86	N	E N	11	8	O.	O.	.22
T. . 17	30.16	56	69	53	78	71	74	N W	S E	7	3	C.	C.	.0
F. . 18	30.26	62	68	57	77	67	72	E	S	3	8	C.	C.	.0
S. . 19	30.16	60	65	56	79	76	78	E	E	4	10	C.	C.	.0
☞	30.06		68	57 *†			72							.68

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Means for the week.

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING AUGUST 26, 1905.

A. E. PECK, passed assistant surgeon. Commissioned passed assistant surgeon with rank of lieutenant from March 27, 1904.

A. C. H. RUSSELL, surgeon. Detached from the "Newark," and ordered to the Bureau of Medicine and Surgery, Navy Department.

J. STEPP, passed assistant surgeon. Detached from the "Topeka" and ordered home to wait orders.

F. WOOD, retired pharmacist. Detached from the Naval Medical School, Washington, D. C., and ordered home.

RECENT DEATHS.

DR. EDWARD W. DOTY, who was for a number of years a well-known practitioner of Paterson, N. J., died at the residence of his wife's father in Dover, N. J., on Aug. 21. He was born in Newark, N. J., in 1856. After engaging in newspaper and railroad work, he began the study of medicine in the medical department of the University of Michigan, and in 1886 was graduated from the Long Island College Hospital in Brooklyn, N. Y.

DR. EDWARD W. SHEAD of Seattle, Wash., died in that city Aug. 19, as the result of an accident. Dr. Shead was graduated from the Harvard Medical School, and had served both at the Boston City Hospital and the Cambridge Hospital. He had been in Seattle but a few years when his untimely death occurred.

BOOKS AND PAMPHLETS RECEIVED.

Conservatism in Pelvic Surgery. By Hunter Robb, M.D. Reprint.

Annual Report of the Health of the Imperial Navy for the Year 1902. Tokyo.

The Early Diagnosis of Cancer of the Fundus, with Report of Cases. By Hunter Robb, M.D. Reprint.

A Case of Radical Mastoidectomy Performed under Unusual Indications. By John R. Winslow, B.A., M.D. Reprint.

Hygienic Laboratory, Bulletin No. 23, Aug. 1, 1905. Changes in the Pharmacopœia of the United States of America. Eighth decennial revision (official from Sept. 1, 1905). By Reid Hunt and Murray Galt Motter. Washington. 1905.

Original Articles.

CAUSES OF DISABILITY AFTER FRACTURES OF THE LOWER LEG AND ANKLE.*

BY FREDERIC J. COTTON, M.D., BOSTON.

THE thing we know least about in surgery, and particularly in minor surgery, is end results. This is particularly true in regard to fractures. The great experience gained in hospitals is after all a rather loose experience, and under present conditions of hospital practice (and abuse) in the large cities, no one man has a large series of fractures in private practice, and hospital cases are hard to follow. So we tend in prognosis to fall back on tradition and authority rather than to tabulate our actual experience.

I have never yet looked into the results of any single class of fractures without finding sharp discrepancies between the traditions and the facts as they stand. Many such discrepancies bear on prognosis and not particularly on treatment. I believe the facts that I shall here try to bring out call for some modification in treatment as well as prognosis. We were all taught, I think, that deformity was the thing we were to avoid in leg fractures — and taught little else. In fact, it seems to make little difference whether there is a little shortening, whether or no the much-talked-of "riding fragment" is present. Once solidly healed, the shaft is perfectly competent to bear weight whether smooth and regular or not — the important disabilities that follow these fractures are not of the leg but of the foot and ankle. Deformity as such is to be avoided, of course, but it is not of the greatest importance. I am firmly convinced that the avoidable *disabilities* are nearly all due to one or more of three causes, as follows:

(*a*) Failure to maintain or restore the general long axis of the leg, whether local deformity is much or little.

(*b*) Mechanical damage to the ankle-joint or change in its plane, and

(*c*) Loss of joint motion from rigidity of muscles and tendons.

It is some years since we learned the lesson in regard to Colles' fracture that disability and deformity had no very close connection, and that over-long fixation was almost the only cause of functionally poor results. This does not apply directly in case of fractures of the leg and foot, because the leg has a function in weight-bearing as well as propulsion; hence the mechanical conditions of shaft and joint are more important, but when one comes to look at end results the frequency with which disability is due mainly or entirely to stiffness is surprising.

I have been watching these cases for several years with a view to getting at the reasons for disability in individual cases, and about four years ago, with Dr. Bottomley, attempted a systematic study of end results of leg fractures by sending out cards to old patients. It did not work very well, owing largely to the fact that many leg fractures occur in young workmen of the drifting class. We got relatively few cases, and a recent search I have made found but few more. In the main the cases on which I have to base my conclusions are cases followed through the out-patient till they were walking, and more especially those who came to the City Hospital long after injury to seek relief from disability. In all I have notes of forty-seven cases followed to something like end results. They are in the main the *least favorable* of our results. Good results do not appear again in hospital. What the percentages are I do not know. My impression is that any considerable degree of disability is rather unusual. Most cases recover very well, though it takes a good while.

This is given as a preliminary paper, not because I expect to change conclusions but because a study of this sort, to give considerable numbers of each type of fracture and each form of disability, should number hundreds of cases. Perhaps in time we may get such data. Only from careful detailed observation of large numbers, however, can we learn much; letters from patients as to results are almost worthless.

In the series studied the following conditions were found as causes of disability of greater or less grade:

(*a*) Displacement of the bone ends, *per se*.

(*b*) Change of axis of the leg.

(*c*) Damage to joints, interfering with their bony mechanism.

(*d*) Arthritis — "traumatic."

(*e*) Static flatfoot, not from deformity but following over-use of atrophic muscles.

(*f*) Contractures.

Shortening as a cause of disability I could never be certain of. Rarely is there over half an inch shortening, and unless it is considerably more than that I cannot see that any disability results, though there may be a slight limp.

Rotation out or in of the lower fragment I did not meet in more than a trifling degree. *Outward* rotation, unless slight, must be a favoring factor in producing "flatfoot."

Poor circulation and persistent swelling often delay use, and so do damage. I have one case where the swelling itself, persisting for many months, seemed a *direct* cause of disability.

To take these matters up in detail:

As to the displacement of bone ends in fractures of the tibial and fibular shaft. Displacement is a factor in delay of union. I have watched very long course of union from this, and have twice operated merely to quicken intolerably slow union by getting better apposition, but so far as direct result of *moderate* inaccuracy in replacing bone ends goes, I believe it is *nil*. If the deformity is *great* there seems to be enough bone strain to give some persistence of *local* pain and soreness on use. This was present in two cases of our series.

Displacement is, however, of importance in another way. The foot, to fulfill its function, should be under the weight-bearing (vertical) line of the leg; a relatively slight bowing or

* Read before The Massachusetts Medical Society, June 13, 1905.

overlap may throw it out enough to make trouble by increase of strain on ankle and foot. It is a question then not of bone outlines, but of preservation of the general axis of the leg.

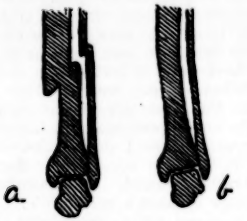


Fig. 1.

(a) Which shows obvious deformity, is no worse so far as preservation of the axis of the leg is concerned than (b) which looks much more nearly normal.

The most common deformity seems to be in the direction of valgus. This throws the weight-bearing line to the inner side of the foot. It may often act as does a rachitic knock-knee, and, for the same reason, producing an ordinary "static" flatfoot deformity.

Deformity in the contrary direction if marked gives a defective tread and trouble in balance, and not infrequently some disability from the strain on the tendons outside the ankle. This deformity is a rare result in fracture of the leg, common as a result of fractures about the ankle. Deviation in this direction if of slight degree is a help rather than a damage, for it lessens the chance of a flatfoot strain, being in fact equivalent to the Trendelenberg operation for flatfoot.

Forward deviation is rare, except for the very mild deformity often associated with inward bowing where this is due to overlapping. Presumably the result of marked forward bowing would be like that resulting from like bowing after rickets, namely, a shambling gait without real disability. I have not seen it as a cause of disability after fracture.

Backward bowing, on the other hand, is common. This is because of the tendency of the limb to sag downward in its plaster or splints as the original swelling subsides, and because our inspection is apt to be limited to a front view of the leg, which does not show this deformity.

Deviation in this direction if more than slight is rather serious. Study of cases shows two factors that bear on this.

First, such deformity gives what is practically a shortening of the tendo Achillis, and moreover somewhat impedes the action of this tendon mechanically.

Second, the forward displacement of the foot results in (*a*) what amounts to an extreme hyperextension of the knee, (*b*) in a practical lengthening of the lever length of the foot, involving extra lift on the part of the soleus and gastrocnemius, already handicapped by the distortion of their tendon. The practical result is a considerable loss of working power and a good deal of clumsiness of gait. Not infrequently the disability is enough to warrant secondary operation. I have notes of two such cases operated and of one other that should have considered operation.

The distortions occurring from fractures involving the ankle-joint bring in new elements. Here we have to deal not only with the change of axis but often with a widening of the joint or a dislocation of the astragalus.

Backward dislocation at the ankle complicating Pott's fracture is familiar to all of us. It results in partial loss of motion, in loss of any firm column of support, and sometimes gives almost total disability. Fortunately it is rare and probably always avoidable by proper treatment.

Forward dislocation at the ankle is less frequent. I have seen it but twice in the cases of this series, and in both cases associated not only with fracture of the malleoli but also with a chipping off of the front of the tibia at the ankle. Both were very lame, but one case had fibrous ankylosis, the other much rigidity. There are no data to show how much trouble the displacement alone will cause.



Fig. 2.

The backward bowing shown is equivalent so far as leg mechanism is concerned to a hyperextension of the knee to an extent indicated by the dotted line.

Displacement inward has in this series been very common — this I take not to be the rule. Such displacement results from fracture across the tibia into the joint or from "inverted Pott's" fracture — in a mild degree and rarely from excessive correction of a Pott's fracture. The disability is from the malapposition of joint surfaces, from the twisted tread of the foot, and from associated stiffness. The disability is usually severe except where the distortion is from overcorrection in Pott's fracture, which does no harm.

Outward displacement is common, resulting in the rule from insufficient care in treating Pott's fractures, *i. e.*, from neglecting the often needful extreme inversion of the foot. The symptoms are essentially those of static flatfoot plus muscle

rigidity. Even slight deviation in this direction is apt to cause trouble. Where there is added a widening of the mortise as well as an outward distortion, we have an added factor of disturbance when static troubles begin.



Fig. 3.

The mechanism of inward displacement of the foot with (a) Tibial fracture involving the joint, (b) Inverted Pott's fracture, (c) Over-correction of typical Pott's fracture.

The symptoms due to static trouble from ankle fracture vary, as do those of ordinary static flatfoot, according to individual equation; but I have notes of but one case with *marked* outward displacement due to fracture in the shaft where symptoms did not develop, and *no* such case where like deformity involving the ankle joint failed to give symptoms.

Sometimes with, sometimes without, trouble with the arch we have a true arthritis. It is clinically characterized by swelling in some degree, by pain, sensitiveness and loss of motion, and inasmuch as these may all be due to other causes it is hard to be sure whether arthritis is present. In two of the cases of this series I know it was present because I operated on them — one showed fibrous ankylosis, the other marked loss of articular cartilage.

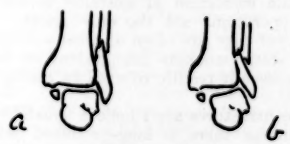


Fig. 4.

Outward displacement in Pott's fracture. (a) Simple outward displacement. (b) Outward displacement with widening of the mortise, permitting rocking of the foot outward.

A comparatively large class are those in which with beginning use relative overloading has overtaxed the muscles that should support the arch, but are unable to do their work, owing to the simple atrophy of disuse. These cases result in simple static flatfoot in all ways comparable to the ordinary orthopedic flatfoot with little or no tendency to the development of contractures.

By contractures I mean all loss of joint motion due to actual or practical shortening of muscle and tendon in the limb. Just what the essence of this change is no one knows; it seems to be the late stage corresponding to the early loss of motion common to all fractures, entirely recovered from in time in most instances, in others resulting in permanent change. It is not a pure disuse phenomenon, though averted by persistent early use. It has long been known that fixation, even long continued, has little and transient effect on normal limbs or on those affected with certain pathological processes, but this does not hold true in case of injury. In every case of fracture of the leg there is at the time that apparatus is removed some stiffness, associated with swelling and infiltration, but not proportionate to them. It is roughly, but very roughly, proportionate to the general amount of damage, *e. g.*, it is much less with an uncomplicated fracture of the fibula at or near the joint than with a severe fracture of both bones. Its extent increases very definitely with the length of time the limb is held fixed. In cases where motion is begun early it subsides; in cases where motion is long postponed it often persists without change, or with little change, even after use. The site of the change is various, according to the site of injury — this is the most definite and most significant fact about it and I think helps to explain what it is we are dealing with. In cases of ankle fracture, or fracture below the middle of the leg, it is ankle stiffness with which we have to deal, while the knee is unaffected. If the break, on the other hand, is in the upper third of the shaft, the stiffness at the ankle is far less, but there is a limitation of knee motion, often of considerable amount and tending to be permanent.

Throughout the cases I have looked into this has held true — it is a fact with which I was previously unacquainted and I think it helps our understanding of the character of the process. Where knee-stiffness follows fractures below the knee we can be sure that it has nothing to do with direct muscle damage or with alleged tendon adhesions. I am inclined to be skeptical about tendon adhesions. So far as the real evidence goes, they seem to be very rare. It must depend on reflex action or fixation, or both. Fixation alone should act equally on knee and ankle, for both are always fixed whether the fracture be low or high up, but this is not the case. On the other hand, the cases studied show that those in which motion is long delayed give most stiffness. We must, I think, be forced to consider this stiffness due first to some reflex action (similar to spasm from joint damage) aggravated by long disuse and tending to pass over to a permanent shortening of the muscle. I believe this to be the only logical explanation.

Now as to the clinical side: if we are dealing with knee stiffness from high fracture we find limitation of motion definite but not extreme, and not greatly interfering with ordinary function. The limitation is of flexion only, for all fractures are put up in extension. At the ankle the problem is different. There is apt to be limitation in all directions — least in direction of plantar flexion, usually most obvious in limitation of pro and supination. If the foot has been put up without due care in securing a right angle loss of dorsal flexion is considerable; if the right

angle has been preserved, as it always should be, this loss is much less. In a general way short tendo Achillis is common to all fractures below the middle of the shaft; lateral limitation seems more in ankle fractures. Loss of dorsal flexion entails according to its grade a difficulty in the normal stride. There is an attempt to compensate by medio-tarsal motion, and the patient suffers from what the orthopedists call medio-tarsal strain (familiar in other conditions involving short tendo Achillis).

Loss of lateral motion does not interfere with the straight step, but renders all accommodation to varying surfaces a strain on the shortened structures. These are the patients who "can walk all right in the house but not on the street," familiar to all of you. Every attempt to accommodate is a strain on the shortened tendon of the inner or outer side; every sharp strain brings its reaction of lameness, and often fresh access of stiffness — part of which remains permanently, so that they get worse instead of better. Slight wrenches of these joints are serious in their results. This I have seen repeatedly when, after months of tolerable use, light fresh strains have resulted in considerable and permanent stiffness.

This stiffness differs from that of simple static irritation in that it is not relieved by rest, as are like types of foot of the usual flatfoot origin whether they show only pain or pain with spasm — nor are the cases we are considering greatly relieved by the wearing of carefully fitted supports — nor does the stretching of the Schaffer shoe limber them up to any serviceable extent. It is not well to be too dogmatic, but it seems that the pain and stiffness of these cases, with stiffness from trauma and disuse, are entirely different from the like symptoms in the cases above noted, where mechanical disadvantage and weak muscles following fractures give a breaking down or laming of the arch later.

Dr. E. G. Brackett was kind enough to give some of these cases the benefit of his skill in treatment — and even in his skillful hands these really rigid ankles proved far more intractable than any rigid flatfoot; in fact they failed to improve to any degree under any treatment devised, while the static cases following fracture yielded excellent results. Tenotomies we did not try, nor have I seen them tried in such cases save for the tendo Achillis; tenotomy of all the lateral tendons is a severe measure, though it would be amply justified by some of these cases if results could be promised.

Since I began to formulate this matter of contractures I have treated a number of leg fractures in house and out-patient departments at the hospital, by allowing very early a brief daily removal of apparatus and gentle active motion of the ankle joint. Passive motion I have avoided as more liable to do harm. In cases so treated I have had no trouble with position or with progress of union, and have had far more rapid return of mobility. Part of them only have been followed up, so I cannot speak of statistics, either with the routine or with this method, but I believe this to be a step in the right direction. I am not ready to advocate the "massage" treatment of our French *confrères*, but I do think they have proved that we insist too absolutely on fixation in many cases, and that we fix fractures for a needlessly long time. Absolute fixation is necessary not for a given number of weeks or until union is firm but only in so far and so long as there is danger of displacement,— which is usually not long,— after this, protection with intervals of motion and perhaps massage to maintain flexibility and nutrition can do no harm. As said above, we have learnt the lesson as it applies to Colles' fracture, — the time has come when we must extend its use. Twenty years ago Sands' paper on the harmlessness of fixation was the beginning of the end of the old vicious practice of forced passive motion; we have gone to the other extreme now and have enforced absolute fixation beyond all reason.

To recapitulate, the chief causes of disability in leg and ankle fractures as they appeared in this series studied are:

Failure to preserve the line of the limb — and consequent static trouble.

Mechanical damage to the ankle joint.

Static trouble from over-load on atrophied muscles — apart from any malposition.

Contractures.

In the first place, the tendency to mal-position must be guarded against, first, by careful study of lesions and by careful reduction; secondly, by careful review (checked if may be by x-rays) of the result of reduction and of the present condition — a review to be made after not over two or three weeks, when swelling and spasm are gone, yet while correction of mistakes is still easy. Later, operations are the only resort; — undesirable, yet they are often of great service. The purely static troubles independent of malposition are usually readily relieved by careful plate-support.

The contractures are I believe avoidable in all cases unless there is long-continued tendency to recurrence of deformity or delayed union or extreme trauma affecting soft parts as well as bone. I believe they call for treatment directed toward preserving flexibility and nutrition of the muscles, instituted before fixation has rendered the early spastic changes permanent. This means that rigid plaster bandages must be made removable at two to four weeks, not at three months, and that exercises without weight bearing must be done persistently under proper supervision. If this is not done we must expect stiffness of ankles and less often of knees, as one of the great factors of disability. In five or ten years from to-day I believe any disability from stiffness due to contractures following ordinary leg fractures will be considered as great a reproach as obvious malposition is to-day, as great reflection on treatment as are the stiff hands and wrists after Colles' fractures — once so common — in the practice of to-day.

THE APPLIED ANATOMY OF THE FRONTAL SINUS.*

BY HARRIS P. MOSHER, M.D., BOSTON.

THERE are two frontal sinuses, a right and a left. They are separated by a median partition which corresponds to the sagittal suture of the skull. The sinuses are placed in the middle and inferior part of the anterior face of the frontal bone. Each sinus represents the termination of the anterior part of the ethmoidal labyrinth of which it is an off-shoot. The sinuses stretch like wings transversely over the anterior portion of the orbit. They can be represented diagrammatically by drawing an arc which has for its center the mid-point of the base of the nasal bones and extends from the middle of one supra-orbital ridge to the middle of the other.

A horizontal section of the skull shows that the sinuses have the form of a triangular pyramid. The base of the pyramid is in the middle line, while the apex extends outwards a variable distance over the orbit. There are, therefore, three sides or faces to the sinus, — the anterior face, which is subcutaneous, the posterior or cerebral face and the inferior or orbito-nasal face. In the posterior inferior angle of the pyramid, the width of the corresponding half of the ethmoidal notch from the median septum there is an opening which connects the cavity of the sinus with the nose.

All recent studies tend to demonstrate that the frontal sinuses are ethmoidal cells which have insinuated themselves between the two tables of the frontal bone. The following facts support this view: The development of the sinuses corresponds in time with that of the ethmoid cells. The sinuses are not present at birth but begin to appear toward the end of the first year or during the second. They spring from the level of the anterior part of the ethmoidal labyrinth, and enlarge progressively upwards and from within outwards. When the sinuses are small they can be distinguished from the neighboring ethmoidal cells only by the fact that they are found between the two layers of the frontal bone. Further, the sinuses open indifferently into the two grooves at the top of the middle meatus, into which the ethmoid cells open, and the ethmoidal cells often mound into the floor of the sinus. Finally upon the whole length of the ethmoidal notch of the frontal bone there is a row of little half cells which is matched and completed by a similar row of cells upon the upper surface of the lateral mass of the ethmoid bone.

The Size of the Sinus. — According to certain writers it is possible to estimate the size of the sinus by the prominence of the superciliary ridge. Roughly this is true. The sinus does not begin to develop until after birth and does not reach its full size until between twenty and twenty-five years. Defective development of the sinus is characteristic of certain negro tribes. At eight years of age the sinus measures 6-7 mm. (¼ in.). The average capacity of the sinus ranges between 4-5 cc. (1-1½ dr.). Owing to more or less deviation of the septum which divides the sinuses they are seldom of the same size.

The Mucous Membrane of the Sinus. — The mucous membrane is a derivative of the mucous membrane of the nose and has the same extensive vascular and nerve supply. The mucous membrane of the nasal fossa consists of two kinds, the respiratory and the olfactory. The mucous membrane of the respiratory region is distinguished from that of the olfactory region by its thickness (4 mm.) and by the presence of a venous network of large size. The epithelium is ciliated and of the stratified columnar type. Within its superficial layer there are numerous goblet cells. The tunica propria is composed of fibrous connective tissue containing many clefts occupied by leucocytes. Occasional nodules of lymphoid tissue are scattered through this. The mucous membrane contains numerous racemose glands which open on the free surface by funnel-like pits. They are mixed glands, some of which secrete serous fluids, some mucous products. The veins of the mucosa are so wide and plentiful that the layer in which they run is practically cavernous tissue. The mucous membrane of the accessory spaces of the nasal fossa, the frontal, the maxillary and the sphenoidal sinuses and the ethmoidal cells closely resembles that of the respiratory region. These tracts are distinguished chiefly by the marked reduction in the thickness of the mucous membrane of the sinuses (.02 mm.). The meager supply of glands is another distinguishing feature. (Piersol, Normal Histology, p. 402.)

Arteries. — The arteries spring from the spheno-palatine artery and enter the sinus by its duct. The anterior ethmoidal artery furnishes a few small branches which enter sometimes the posterior face, sometimes the inferior face.

Veins. — The veins make a compact network in the mucous membrane. They are especially developed on the external wall. They are in direct communication with the orbit. There is a second venous connection between the sinus and the orbit through the ethmoidal veins. These pierce the posterior and the inferior wall. The veins of the posterior or the cranial wall come into relationship with the superior longitudinal sinus or, better, with the vein of the foramen cecum. The greater part of the venous blood naturally empties into the spheno-palatine vein, the vein which collects the blood from the mucous membrane of the turbinates and the regions between.

Lymphatics. — The lymphatics are a part of the lymphatic system of the nose. They are, therefore, in relation, the same as the lymphatics of the nose, with the subarachnoid space by means of minute bony canals in the walls of the sinus.

Nerves. — The nerves of the frontal sinus come from the ethmoidal branch of the nasal nerve. The nerves are very numerous and are arranged in a network which makes the mucous membrane very sensitive.

The Form of the Sinus. — There are two dis-

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tinct varieties of the frontal sinus, the small sinus and the large.

The Small Sinus. — The small sinus corresponds to the rounded excavation which is ordinarily present at the level of the inner angle of the orbit at its fronto-orbital part. This excavation is placed behind the posterior border of the ascending process of the superior maxilla and in front of the os planum of the ethmoid and immediately above the lachrymal bone. The small sinus does not rise above a line drawn between the two supra-orbital notches, while its anterior border is limited by a line running up from the crest of the lachrymal bone. When the cavity of the sinus is so reduced the anterior wall is very thick.

The Large Sinus. — The large sinus extends upwards nearly through the glabella and outwards over the inner half of the orbit. Normally in the median line its height varies between 20-22 mm. (¾ in.-1 in.). This may be increased in very large sinuses to 40-50 mm. (1½ in.-2 in.), the sinus reaching even the frontal protuberance.

The Prolongations of the Large Sinus.— The large sinus is very commonly increased in size by sending out two prolongations, one outward over the supra-orbital ridge, and one backward over the orbit.

The Outward Prolongation.— Ordinarily the outward limit of the sinus is 25-27 mm. (1 in.) from the median line, that is the middle of the supra-orbital ridge. Occasionally these limits are exceeded, and the sinus extends some 45-50 mm. (2 in.) to the malar bone.

The Backward Prolongation.— The backward prolongation extends backward on the inner side of the sinus to end blindly about 15-10 mm. (⅜ in.) from the rim of the orbit. The height of the prolongation is scarcely 2-3 mm. (⅛ in.). It comes into direct relation with the anterior ethmoid cells.

Two other small prolongations of the sinus are sometimes found; a prolongation into the crista galli and a prolongation into the root of the nasal bone.

The cavity of the frontal sinus is frequently narrowed by the ethmoid cells mounding into it. The relationship of the ethmoid cells will be discussed in speaking of the floor of the sinus.

The Septum of the Sinus.— Normally the septum of the sinus is a triangular plate of bone placed vertically between the two sinuses. Its anterior border is attached to the posterior face of the sagittal suture, its posterior border corresponds to the ridge of the frontal bone upon which the falx is inserted, while the apex is uppermost and is placed at the junction of the anterior and the posterior wall. The base is joined with the anterior superior edge of the perpendicular plate of the ethmoid bone. Usually the septum is quite thin, but only rarely are there perforations in it. I found but one undoubted perforation in one hundred heads. When the sinus is very small the septum is thick, owing to the development in it of spongy tissue. It may measure in such cases from 6-12 mm. (¼-½ in.).

The deviations of the septum are extremely variable. On account of its surgical bearing, it is important to remember that no matter how much deviated the upper part of the septum may be the base is nearly always in the median line. Naturally, therefore, the sinus should be entered from as low a point as possible.

In the examination of my specimens I have found that the sinus of one side extended across the middle line and encroached on the territory of the opposite sinus in about 5% of the cases. When such a condition is present the wrong sinus might be opened.

Incomplete or Partial Septa.— In addition to the median septum the frontal sinus often has partial septa. These have two seats of predilection. The commonest place is at the summit of the sinus where the anterior and the posterior walls meet, and the second and more dangerous place is the beginning of the backward or orbital prolongation. Rarer and more accessible septa are found on the median septum itself. These are usually roughly vertical.

The septa which occur in the summit of the sinus run parallel with the median septum, so that the pockets which they make empty freely into the lower part of the main sinus. Where, however, they run obliquely, the reverse of this is true. The thickness of these septa scarcely exceeds 1-2 mm,; that is, they are about as thick as stout paper. Their size depends upon the distance between the two tables of the frontal. Their height varies between 5-10 mm. (¼-½ in.). I found these small septa in about 10% of the cases. In about 1 or 2% of the cases there occurs a very large septum which almost divides the sinus into two parts. At first sight it seems as if the sinus is completely divided, but just at the lower posterior angle of such a partition there is always a communication with the main sinus. One could readily mistake such a partition for the outer wall of the sinus, unless he had this point in mind and passed a probe round the lower end of the partition into the part of the sinus beyond.

The partial septa of the backward prolongation of the sinus are easier to get at than those of the upper part. Usually there are not more than two or three of these. The greatest number recorded is four. These septa have a tendency to cross the axis of the prolongation obliquely, not to run parallel with it. For this reason the pockets which they make drain very poorly.

The study of the relations of the sinus is the study of the sides which compose it. There are three such sides or faces, and the naso-frontal canal which connects the frontal cavity with the nasal cavity.

The Anterior or Frontal Wall.— The anterior wall, when it exists, is subcutaneous in its whole extent. Exploring the sinus through this wall would be most easy if it were not for its thickness and the great variability of the size of the sinus.

Limits of the Anterior Wall.— Where the development of the sinus is normal the anterior

wall begins below at the nasal-frontal suture and ends in the median line half way to the frontal protuberance. On the sides it extends to the mid point of the orbital rim. Taking subjects as they run on the dissecting table, the absence of the anterior wall occurs more frequently than writers usually state.

In two thirds of the cases the anterior wall of the sinus corresponds with the anterior wall of the skull. In a third of the cases the sinus is of the small variety and is found just within the rim of the orbit at its superior internal angle — just above the lachrymal bone. As a routine, therefore, the first incision into the sinus should be just at the root of the nasal bone.

The average thickness of the anterior wall is 4 mm. (⅛ in. +). It may be as little as 1-2 mm. or as great as 7-12 mm. (1-32-½ in.).

Structure of the Anterior Wall.— The anterior wall is ordinarily as compact as the orbital rim. For the rest of its extent it is made up of spongy tissue, especially at the frontal protuberances. This layer of spongy tissue is what gives the free bleeding when the sinus is entered from the anterior wall. Owing to many small channels in the bone this wall is in relation with the external circulation. By means of these infection can travel both inward and outward. The anterior wall often ends superiorly in a set of cells which rim it about like a crown. These cells occasionally require opening up after the fashion of the cells of the mastoid process.

The Posterior or Cranial Wall.— The posterior wall corresponds to the cavity of the cranium. This wall is made up of two parts, a vertical part and a horizontal part. The horizontal part is the roof of the backward or orbital prolongation.

Fairly often there is in the neighborhood of the foramen cecum a bony canal, running to the cranial cavity and emptying into the frontal sinus. Normally there are openings in the internal wall at the level of the frontal protuberances which give passage to veins which finally end in a submeningeal vein of considerable size. At this level the dura mater is firmly attached to the bony wall.

The posterior wall is always in relation with the cavity of the sinus, no matter how small this may be. This cannot be said of the anterior wall.

The Floor of the Frontal Sinus.— Anatomically the floor of the frontal sinus is the orbito-nasal wall, because it extends over the roof of the nasal fossa and over the inner part of the anterior portion of the orbit. The floor is either funnel shaped or saucer shaped. Very often the nasal part contains a distinct ledge which in transverse section makes the septal wall of the sinus appear as if a step of bone had been added to it. Under this step runs a branch of the anterior ethmoidal artery.

The Orbital Part.— The outer part of the orbital portion is on a slightly higher plane than the inner or the nasal part. It is generally triangular, and measures transversely 15-29 mm. (⅛-1⅛ in.) and anteroposteriorly 10-15 mm. (⅜-⅝ in.). In a small sinus the floor consists of but little except this orbital part. In such a sinus the floor is found in the superior internal angle of the orbit. The bone which makes it descends like a wedge between the posterior border of the ascending process of the superior maxilla and the os planum of the ethmoid. Below it articulates with the lachrymal bone. Measuring from the lachrymal bone its height is 12-20 mm. (½-¾ in.). Its width is less extensive, varying between 12-15 mm. (½-⅝ in.). The bone is so thin that it has been broken by a scratch. It participates in all fractures at its level which run to the orbital border and is easily wounded by blunt instruments if they strike under the inner rim of the orbit. Fencing accidents have furnished some classical cases. It offers but little resistance to pus.

The Nasal Part of the Floor of the Frontal Sinus.— The nasal part of the floor is that part which is placed in front of the ethmoidal notch. Anteriorly it articulates with the nasal bones and the ascending process of the superior maxilla. Internally it is in relation with the median septum of the sinus and posteriorly with the ethmoid cells. Externally it is continuous without demarcation with the orbital portion of the floor. In the posterior angle of this quadrilateral if it exists, or, if it does not, in the posterior part of the floor and the width of half the ethmoidal notch from the median septum, there is an opening which connects the sinus with the middle meatus of the nose. In the smallest sinuses the floor as such ceases to exist and the cavity of the sinus is pushed outward into the superior internal angle of the orbit and appears simply as an anterior ethmoid cell, which developmentally it is.

The under surface of the nasal part corresponds internally with the roof of the nasal fossa and externally rests upon the ethmoid cells at the summit of the middle meatus. The relation of the floor of the frontal sinus to the nasal vault is very variable. Sometimes the sinus is directly over the roof of the nose; oftener it is not. In sinuses of a median calibre the floor may be reduced to a slit which crosses the nasal fossa only very slightly. As has just been said, in the smallest sinuses, there is no relationship at all. Furthermore, the sinus of the opposite side occasionally crosses the median line and lies over the nasal fossa on both sides. Even in cases where the floor of the sinus occupies 5-8 mm. of the nasal vault (¼ in.) the bone may be so thick that it can be penetrated only by a drill. These anatomical considerations make the puncture of the floor of the sinus rarely feasible.

The part of the nasal floor which corresponds to the summit of the middle meatus is of more practical interest than that which is over the nasal fossa. The ethmoid cells frequently mound into this and narrow the cavity of the sinus or make drainage by the natural opening into the nose difficult. It is common to have one of these cells attain a considerable size and project into the sinus, especially posteriorly. Such a cell is often called the "frontal bulla." When catheterization of the sinus is successful the catheter

generally forces its way through some such cell, and it is at the expense of such cells that drainage is obtained in the operation of enlarging the naso-frontal duct from the sinus down into the nose. The sizable openings into the sinus which one occasionally finds are due probably to the breaking down of some such anterior ethmoid cell which was in relation with the floor of the sinus.

The posterior internal angle of the sinus is of the greatest surgical importance. This is the part of the nasal portion which is in front of the ethmoidal notch. It is the dangerous area of the sinus. Nature seems to recognize this because there is often a small rib of bone running diagonally downward and outward which protects this region. The ethmoid plate often sends forward here a finger-like process which invites accidents. Also, in this posterior internal angle of the sinus, but on the median septum, however, the vein which runs in the foramen cecum and is the beginning of the superior longitudinal sinus not rarely mounds into the cavity of the sinus. It should be borne in mind in exploring the sinus that it is necessary to keep away from the median septum at least the width of the corresponding half of the ethmoidal notch, and always to do the strong curretting forward and outward, never backward and inward.

The pulley of the superior oblique muscle is in relation with the floor of the sinus. The best guide to this is the notch for the supra-orbital nerve. This is one inch from the median line (25 mm.). The pulley is three quarters of an inch from the median line (18 mm.), one quarter of an inch nearer the median line than the notch and one quarter of an inch (6 mm.) below it. In the wet specimen the pulley is flush with the rim of the orbit, but in the cleaned skull the fossa for the pulley or the spine for the pulley, if this replaces the fossa, is an eighth of an inch (3 mm.) back from the rim. On the cleaned skull the examination of fifty specimens showed that the fossa for the pulley is roughly half way between the top of the lachrymal bone and the supra-orbital notch, and that the lower part of the fossa of the pulley is on a line with the highest part of the nasal-frontal suture. The attachment for the pulley occupies a space about one quarter of an inch (6 mm.) square. In breaking through the roof of the orbit, therefore, one should go back from the anterior wall three eighths of an inch (1 cc.) and should be at least one inch (25 mm.) from the median line. In order to get far enough away from the anterior wall one must keep close to the posterior or cranial wall of the sinus. This is easier to do if the operator stands behind the patient. The pulley is attached to the periosteum of the orbit and readily strips away with it. It is well, therefore, to consider that if the periosteum is disturbed at all within the orbital rim the pulley is disturbed. In opening a sinus of the small type the pulley is always encountered.

As the frontal sinus is simply an enlarged ethmoid cell the rest of the ethmoid cells, especially the anterior ones, have very important relationships with it.

The scheme of the ethmoid region given by Hajek is the simplest and the most practical. The ethmoid labyrinth consists of a certain number of basal lamellæ with intervening spaces or grooves. The lamellæ, with the exception of the first, which is incomplete, extend upward to the cribriform plate and outward to the os planum. The first lamella is made by the unciform process of the ethmoid. It is defective above. The second lamella, the lamella of the ethmoid bulla, is complete and runs entirely through the ethmoid labyrinth. The third lamella gives attachment to the middle turbinate, and the fourth to the superior turbinate. In the spaces between these lamellæ the ethmoid cells develop, and in the adult in part obliterate them. The ethmoid cells are best classified according to their method of draining. They are divided, therefore, into the cells of the middle meatus and the cells of the superior meatus, or, according to a little looser classification, into anterior and posterior ethmoid cells. The anterior cells drain into the middle meatus and the posterior cells into the third meatus. The number of the cells of the middle meatus is from five to seven, and the number of the cells of the third meatus is three to five. One of two ethmoid cells is generally developed in the lamella of the bulla. This results in the formation of a rounded swelling called the "ethmoid bulla," which projects into the middle meatus.

The Middle Meatus.— The cavity of the middle meatus has the form of a funnel, flattened transversely. The internal wall of this is formed by the middle turbinate and the outer wall by the outer wall of the nasal fossa. The base of the funnel is below and the apex is placed above and in front. Upon the external or nasal wall there are two ridges, the ridge of the unciform process and the ridge of the ethmoid bulla. Between these two there is a semilunar groove called the "groove of the unciform" and back of the bulla a groove, which is not always so well marked, the groove of the bulla. The groove of the bulla generally ends blindly. The groove of the unciform often ends blindly also, and often ends in an ethmoid cell. It is very common to have one or two ethmoid cells developed at the summit of this groove. These cells are in direct relation with the floor of the frontal sinus. Very often, as pointed out above, a cell in this position called the "frontal bulla" attains a considerable size and mounds into the floor of the sinus.

As has just been said, the groove of the unciform generally ends blindly. Once in four cases this groove is directly continuous with the drainage canal of the frontal sinus, the naso-frontal duct. Rather rarely the frontal sinus opens into the groove of the bulla, — 6 cases in 150. In a majority of the cases, however (once in every two cases), the frontal sinus opens separately, above and internal to the unciform groove and in direct line with it.

In the lower part of the groove of the unciform the opening of the maxillary antrum is placed,

and once in four cases in the upper part, the opening of the frontal and front and back of the groove like grapes from a central stem empty the majority of the anterior ethmoid cells. A few of these empty back of the bulla into the posterior part of the middle meatus. Another ethmoid cell, the cell of the agger nasi, occasionally either mounds into the floor of the frontal sinus or projects backward and blocks the groove of the unciform, or as it is called in the older nomenclature, the hiatus semilunaris. In like manner any enlargement of the ethmoid bulla, especially any forward enlargement, also blocks this groove. The bulla, therefore, holds the key to the drainage of the frontal sinus, the maxillary sinus and most of the anterior ethmoid cells. As the anterior end of the middle turbinate hides the bulla, practically all exploring and all operating for sinus disease begins with the removal of the anterior end of the middle turbinate.

The anterior ethmoid cells of the upper part of the groove of the unciform not only often mound into the floor of the frontal sinus but often open into it. Further, these cells are often connected in a series with each other and with the sinus. Onodi has pointed out recently that the anterior ethmoidal artery occasionally runs in a half canal in one of these cells. When this condition exists and the cell in which this lies is in connection with the sinus there is another way opened up for infection to spread into the cranial cavity. Again not rarely one of the cells of the groove of the bulla enlarges and comes into relation with the sinus. Instances have been found where such a cell has extended forward to the orbital rim. Such an anomaly has given rise to the report of an accessory frontal sinus. There is probably no such thing as an accessory frontal sinus. Anatomically there is no such thing as the absence of the sinus: it is always present as an ethmoid cell.

The Frontal Canal.— The majority of writers describe in connection with the frontal sinus a canal which unites it with the middle meatus of the nose. Poirier makes this 15 mm. (1-2 in.) long in the male and 10 mm. (3-8 in.) in the female. Its form is cylindrical, but it is slightly compressed from side to side. The diameter varies between 2-3 mm. ($\frac{1}{12}$-$\frac{1}{8}$ in.). It can be entered by bougies corresponding to numbers 6, 7, 8, 9, 10, of the French scale.

The canal cannot be isolated from the cul-de-sacs of the ethmoid cells which surround it and make it. When these are atrophied the duct does not exist and the sinus is in direct relation with the middle meatus. When the cells at the upper part of the middle meatus are well developed they mound into the cavity of the sinus and lengthen the duct. In one half of the cases a probe can be passed from the frontal sinus through its duct down into maxillary antrum. Pus, therefore, can find its way into the antrum in a still greater number of cases.

The Superior Opening of the Naso-Frontal Duct.— The upper opening of the canal is placed the width of the corresponding half of the ethmoidal notch from the median septum of the sinus. Its form and dimensions may be those of the canal below or it may differ greatly from this. Ordinarily the opening is roughly oval. When the ethmoid cells mound into the floor of the sinus they modify its shape, but what is of greater importance, they interfere with the entrance of secretion into it. In one case the opening is placed over and behind the frontal bulla, in another behind and below it. Even when there is no projecting ethmoid cell to narrow its size the opening may be simply a transverse slit, or a slit with the axis slanting toward or away from the median septum. Often the opening is at the bottom of a deep pit and guarded by a rib of bone which slants downward and outward from the median septum.

Catheterization of the Naso-Frontal Duct.— A study of the anatomy of the naso-frontal duct shows that it is only by chance that the sinus can be catheterized. The direction of the canal is very oblique from above downwards and from before backwards. The opening of the duct is on the average 50 mm. (2 in.) away from the meatus.

In order to catheterize the sinus it is almost always necessary to remove the anterior end of the middle turbinate. Of course the meatus must be cleared of polypi. The procedure of catheterizing the sinus is as follows: The catheter is bent at an angle a little over or a little under 90 degrees, and introduced between the anterior end of the middle turbinate and the ethmoid bulla. It is then brought forward and rotated outward until it engages in the groove of the unciform. The handle is then depressed and if the naso-frontal duct is continuous with the groove of the unciform, as it is once in four cases, the catheter glides into the sinus and its handle falls backward and lies snugly against the incisor teeth. In case the groove of the unciform ends blindly the catheter brings up in this pocket or in an anterior ethmoid cell. In the majority of cases the catheter breaks through the base of this ethmoid cell and enters the sinus. If this does not happen and one finds himself in an anterior cell the catheter is withdrawn slightly, rotated inward in order to jump the bar at the top of the groove of the unciform and so enter the opening of the sinus, which in one half of the cases is above and internal to this and in a direct line with it. In order to pass a probe from the sinus down into the middle meatus and out of the nose the probe should be bent to correspond to half or three quarters of a circle two inches in diameter.

SOME INTERESTING FEATURES CONNECTED WITH THE OUTBREAK OF SMALLPOX AT NORTH ADAMS, MASS., IN 1904.*

BY LYMAN A. JONES, M.D., NORTH ADAMS, MASS.

FOR many years New England, and especially our own commonwealth, has been a manufacturing rather than an agricultural section. For

* Read before The Massachusetts Medical Society, June 13, 1905.

this reason, in most of our towns and cities, there is a large industrial element in the population. To a considerable extent this latter element is composed of foreigners. This is notably due of the cotton industry, in which many French-Canadians are engaged. By reason of nearness to, and ease of communication with, their own homes, annual pilgrimages to some shrine, and the varying requirements of the cotton industry itself, there is a constant coming and going among this class of help, which gives them a markedly floating character.

Smallpox is of frequent occurrence in lower Canada. Vaccination is not rigidly enforced, and there is not the dread of the disease which exists here. Hence it follows, naturally enough, that from time to time single cases of smallpox, or small outbreaks of the disease, occur in our manufacturing towns, but not for many years has there been so large an outbreak as that in North Adams in the summer of 1904.

A young man, traveling in Ohio with Barnum & Bailey's circus, found himself ill early in July, and being uncertain as to the probable duration of his illness, decided to return to his home in North Adams, where he arrived on July 8. During his journey an eruption developed, and on reaching home he summoned a physician, who made a diagnosis of smallpox. The case was reported immediately to the Board of Health. As the city had no smallpox hospital, it was decided to let the case remain where it was, on Eagle Street (1), and within a few hours of the time of its arrival in the city, quarantine was established, the carriage in which the patient rode from the station was fumigated, and, so far as known, any who had been exposed were vaccinated. Later a nurse was secured to assist the mother in caring for her son. The father, who was not at home at the time, remained away. This was the first case.

On Aug. 2, a young man, driver of a laundry wagon, living on Luther Street (2), near the first case, was sent to the local hospital, suffering with an illness which was said to be typhoid fever. Two days later, on Aug. 4, he was found to have smallpox. This discovery led to the investigation of what proved to be the third case (3), that of a young woman living in the adjoining house on Luther Street, which was fatal on the preceding afternoon.

After an unavoidable delay, required for the necessary seizure of the house on Eagle Street, where the first case was, the second patient was removed thither. This course was decided upon by the Board because of its conviction that the contagion of smallpox was not readily transmitted through the air, and because so long as there were only one or two cases it did not feel warranted in putting the city to the expense of seizing other property and in establishing another smallpox focus.

The quarantine of the hospital, established with the discovery of the case, was maintained for sixteen days.

The local public and the newspapers were somewhat aroused by the occurrence of these two new cases, and some criticism developed at keeping them on Eagle Street, where many people passed daily, and the suggestion was made that the retention of the first case there, without guards, had been responsible for the development of the others.

This opinion on the part of the public and press was strongly confirmed by the events of Aug. 6, when four additional cases were reported, one at 5 Potter Place (4), one at 4 Luther Street (5) — being the second in the house — another at 229 Main Street (6), and the fourth, the father of case 1, at 163 River Street (7). As subsequently appeared this was the only case that could reasonably be attributed to case 1. He had gone to the outside of the house to carry supplies and do errands.

It is interesting to note that case 6, at 229 Main Street, a drug clerk, was a frequent visitor at 107 Eagle Street, and that he had also been a visitor at 4 Luther Street, where were subsequently the two cases already mentioned, and in the public eye this was a further evidence of culpable negligence on the part of the Board.

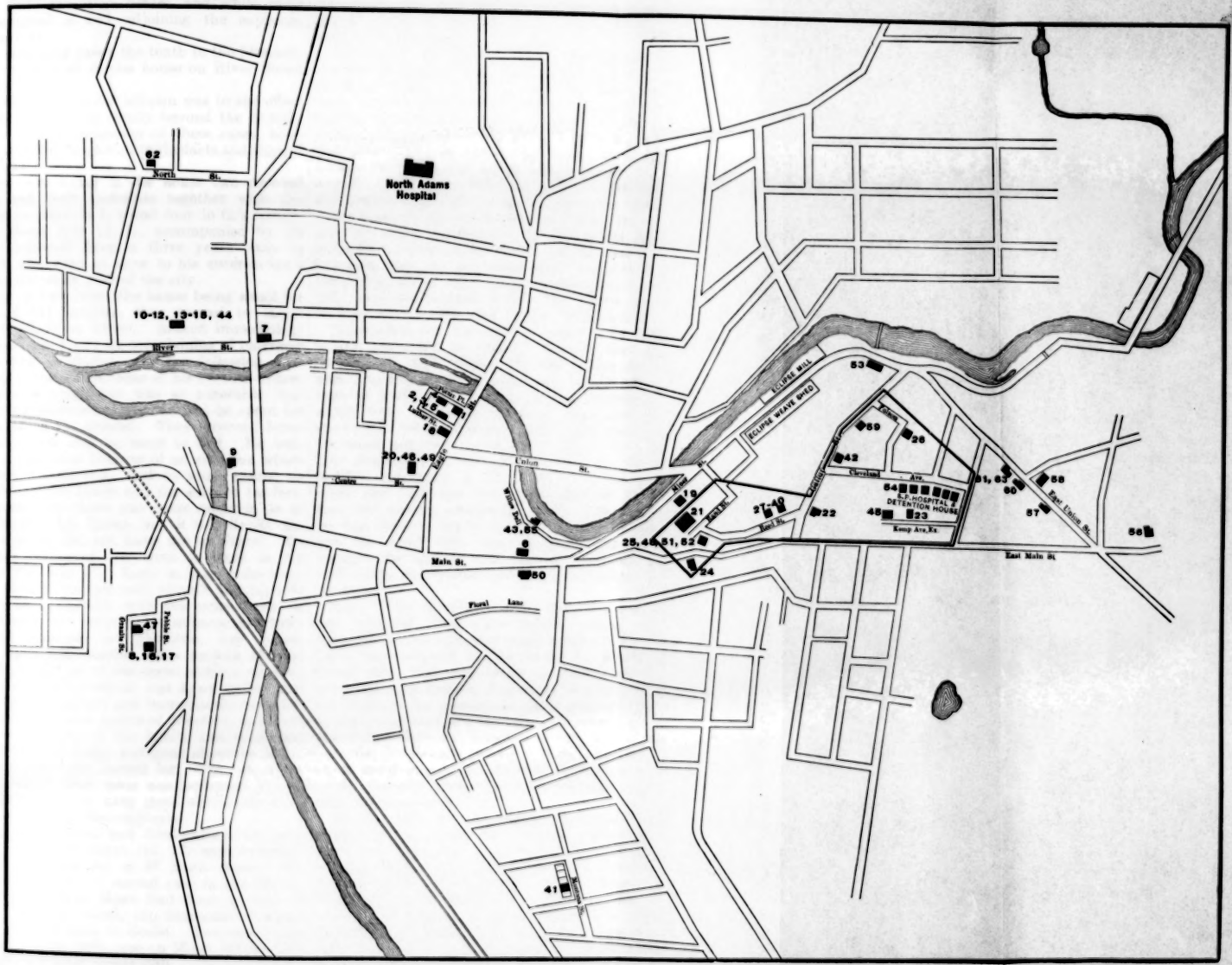
With these further cases and the uncertainty as to whether there would be others, and with the fact that the house first taken lacked room for additional cases, it became needful to establish other hospital quarters. Several locations on the outskirts of the city were suggested, houses in poor repair, without sewer or water connections, and were even strongly insisted upon by city officials and others, but were as strongly opposed by the Board. On Sunday, Aug. 7, after inspection, two new unoccupied houses on Cleaveland Avenue, connected with the sewer, provided with hot and cold water, were rented from the Arnold Print Works. There were five or six other similar houses in the same row, all unoccupied except one, offering an unexcelled opportunity for extension later if needed. On the following day the houses were cleaned and furnished, nurses were provided, and that evening the patients were removed to the hospital.

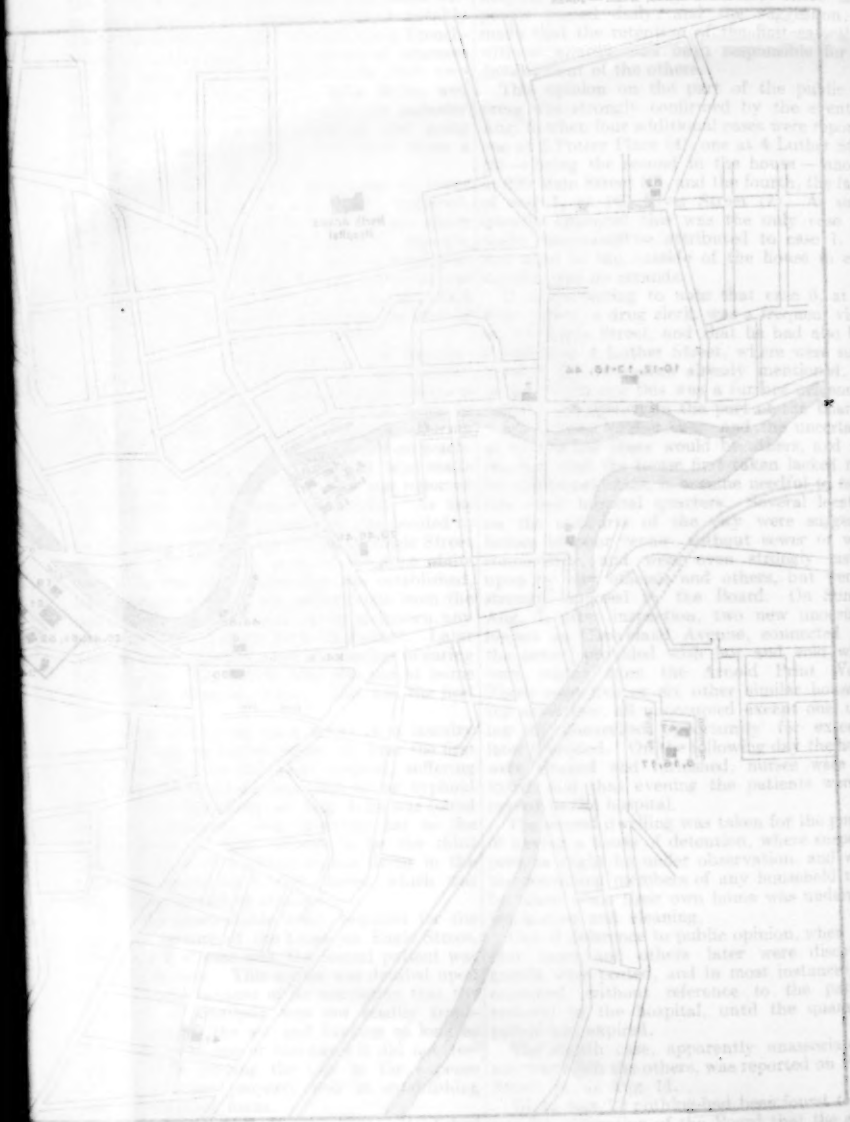
The second dwelling was taken for the purpose of having a house of detention, where suspected persons might be under observation, and where the remaining members of any household might be taken while their own home was undergoing fumigation and cleaning.

Out of deference to public opinion, when these four cases and others later were discovered guards were posted, and in most instances they remained, without reference to the patient's removal to the hospital, until the quarantine period had expired.

The eighth case, apparently unassociated in any way with the others, was reported on Pebble Street (8), on Aug. 11.

Up to Aug. 22 nothing had been found to bear out the contention of the Board that the earlier case, with the exception of the boy's father already noted, had nothing to do with the causation of the later cases. On this date, however,


North Adams Hospital
North St.
River St.
Union St.
Main St.
East Main St.
East Union St.
Floral Lane
Eclipse Mill
Eclipse Weave Shed
Cleveland Ave.
Kemp Ave. Ext.
S.P. HOSPITAL & DETENTION HOUSE
Pleasant St.
Pond Pl.
Liberty Pl.
Church St.
Ashland St.
Green St.
Pebble St.
Marion St.
82
10-12, 13-15, 44
7
2, 5, 6
1, 8
9
20, 46, 49
43, 65
6
41
47
8, 16, 17
50
25, 45, 51, 52
24
21
1, 9
27
48
22
23
64
59
26
42
53
61, 63
60
58
57
56



seven further cases were reported. Of these, the ninth, on Phœnix Street (9), was a man who had been in the local hospital under quarantine until two days before, and while there had occupied a bed adjoining the supposed typhoid case.

The remaining cases, the tenth to the fifteenth, inclusive, were all in one house on River Street (10–15).

At this time popular opinion was to the effect that the disease was clearly beyond the Board's control. An investigation of these cases, however, gave the first clew as to the facts and showed as follows:

There were living in the house two married sisters and their husbands together with the children, — three in L.'s and four in G.'s family. On or about July 13, L., accompanied by his family, returned from a three years' stay in Canada, and went at once to his sister-in-law's home in the south part of the city.

A day or two later, the house being small for the combined families, they moved to larger quarters on River Street. Almost immediately L. himself was taken ill, complaining of chilliness and intense headache. On the following day, yielding to the solicitations of his brother-in-law, he went berrying, but was so miserable that when their destination was reached he spent his time lying on the ground. They returned home at two o'clock and he went to bed. He consulted a physician because of an eruption which appeared on the body and to some extent on the palms of his hands and the soles of his feet. It appears that there was some question as to the nature of his illness, but it was finally decided that he did not have the smallpox. He gradually improved and went to work in the Beaver Mill, Aug. 11. Early in August the baby which slept in the bed with himself and his wife became ill, apparently with the same illness as the father's, but because his sickness had been declared harmless no physician was called. Three days later another child became ill, and so it went until six of the seven children were ill, when the same physician was again called, and the disease recognized and immediately reported. This was the second source of infection, and inasmuch as the men of the family had continued with their work daily, and gone about as usual, further cases were looked for. The physician who attended these cases was interested in and daily present at the drug store where case 6 — the drug clerk — was employed.

On Aug. 24, second and third cases in the same family on Pebble Street (16, 17) were reported, and on the 26th one at 97 Eagle Street (18). This was probably a second case in the family, for shortly before there had been a case of chicken pox, so called, the diagnosis of which for a time had been in doubt. Two cases were reported on the 28th, one on Miner Street (19), and one on Center Street (20).

Because of the Miner Street case, which appeared in a new locality, near a section thickly populated with operatives from the mill close at hand, and because there was reason to suppose that the opportunity for infection had been greater here, a house-to-house vaccination was undertaken for this and some other sections, though a general vaccination had been ordered some time previously.

This led on the following day to the discovery of a case of smallpox in a thirteen-tenement house on Rand Street (21), and later the same day there was found across the street a young girl bearing unmistakable marks of recent smallpox, though she was then recovered. Inquiry showed that just before the time of her return to North Adams from Canada, three weeks earlier, she was ill, and that at the time of her return she was broken out with a rash. During the three weeks since her return she had been about freely, and the other members of the household had attended to their usual work. On this and the following day or two cases were reported at 124 Gallup Street (22), Kemp Avenue Extension (23), near the hospital, at 363 Main Street (24), 13 Reed Street (25), and Folsom Avenue (26).

House-to-house vaccination resulted in the further discovery on Sept. 2 of three German families on Reed Street (27–40), where there were fourteen cases of smallpox. These cases were all mild, and with one or two exceptions, which were still desquamating, were entirely recovered. They were such mild cases that no physician had been consulted. From the history obtainable it was evident that the three families had come to this country within two years, and that the first cases appeared more than two months previously. Two of the families had been in North Adams but eight weeks, and the third only one month. Thus they brought the disease with them, continued at their work, and constituted the fourth source of infection.

Sept. 3 the forty-first case, that of a nurse, was reported. The day before, feeling too miserable to continue her work longer at Floral Lane, she returned to her home on Montana Street (41). This case, being in a portion of the city until now entirely free from infection, was the occasion for a renewed panic almost. One family living near left the city so hurriedly that the clothes were left hanging on the line. The fact that the Board's physician lived in the same block was evidence to some that the disease was being carelessly spread by those who had to do with suppressing it.

By this time, too, the display lines and news articles of the papers had alarmed neighboring towns and they were attempting unwarrantably to stop traffic and passengers from entering their borders. Two members of the Board of Health of an adjoining town being invited to visit North Adams to see for themselves what measures were being taken in regard to smallpox flatly refused, saying there was "too much intercourse as it was, that was just what they were trying to prevent."

This same day another case was reported on Gallup Street (42). On Sept. 5 there was a case

in Willow Dell (43). On the 6th, the seventh child in the River Street families (44) was reported, as well as another case on Kemp Avenue Extension (45). On the 11th a case on Center Street (46), second in the family, and one on Granite Street (47) were found. On the 14th there was a second case at 13 Reed Street (48). On the next day a third case appeared in the Center Street family (49). A priest at 228 Main Street (50), who had been exposed to the disease in attending some of his parishioners at the hospital, was reported ill with the smallpox on the 16th, as were also two additional cases in the family on Reed Street (51, 52). Another case was found at 324 Union Street (53). No physician had been called. The statement that this case had been concealed by the family proved true on investigation, for the child had been ill about ten days when discovered. The same day the cook at the hospital (54), who said she had had varioloid years before, came down with a mild attack of the disease. On the 18th there was a second case in Willow Dell (55). Three days later there was a case at 681 Main Street (56), and on the following day there were reported two cases, one at 510 (57) and the other at 479 Union Street (58). The latter case was that of a young woman who was bookkeeper in her father's grocery store, where many of the people of the neighborhood make purchases. This case had been under the care of a physician for some time and was being treated as a case of skin trouble! The cases on River Street, the second source of infection, seem to be responsible for this case, and through it, indirectly responsible for many other cases in the neighborhood; since it was learned afterwards that the father of this case was accustomed to call on the River Street families regularly for grocery orders before the nature of their illness was known.

On Sept. 30 there was a third case on Gallup Street (59), and also one on Union Street (60). In October there were only three cases: On the 1st, one at 466 Union Street (61), one on North Street (62) on the 10th, and the last on the 14th. This was the second in the family at 466 Union Street (63).

That this outbreak became so extensive was due to the fact that at or about the same time, viz., during the month of July, no less than four separate and independent sources of infection entered the city, only one of which was brought to the knowledge of the Board at the time of its arrival.

Another probable factor in the spread of the disease was that previous to the outbreak there had been many cases of measles and some cases of chicken pox reported. These two diseases are sometimes confounded with smallpox. That such may have been the case here, and thus explain some of the cases otherwise unaccounted for, is shown in one instance where a diagnosis of chicken pox was made, when later a case of smallpox actually occurred in the same family. In another instance the physician at the time of his first visit said publicly that he had just visited a typical case of measles, and on the following day reported the case referred to as smallpox.

Still another factor in the spread of the disease was the concealed case on Union Street, and the disputed case of the young woman in the grocery store on the same street. These, however, should be considered as secondary rather than independent sources.

While the first case appeared on July 8, and the remaining sources of infection were not discovered until the period between Aug. 22 and Sept. 2, it is very gratifying to be able to point out that after Oct. 1 only two new cases were reported, — one of these a second case in the same family, — and that on Oct. 31 it was possible to close the hospital permanently.

During the outbreak the hospital was extended, so that four houses were in use,-- two for hospital and two for detention purposes.

The use of the two houses adjoining the hospital for purposes of detention greatly facilitated the prompt suppression of the outbreak, because it made possible the thorough and immediate fumigating and cleaning of the whole house wherever a case occurred. The idea seemed to be new so far as could be learned, and met with marked approval.

The district on the map enclosed in heavy line, comprising the Reed and Rand streets section, where the third and fourth sources of infection were found, was placed under rigid quarantine, with watchmen night and day, until the incubation period was over. Those living in the immediate vicinity of the infection were revaccinated several days later, thus following the custom in some places of vaccinating twice on alternate days. During the quarantine period the Board themselves supplied fuel and provisions, and also paid the rents.

The first source of infection was responsible for two cases.

While it is impossible of proof, there is a reasonable probability that 25 cases may be traced to the second and 6 to the third source of infection, and that to the two combined 5 further cases may be traced, making a total of 36 cases traceable to these two sources.

The fourth source, the German families, seems not to have directly infected others. This was doubtless due to their lack of acquaintance and intimate association with others, owing to their brief residence in the city and their inability to speak English or French.

There remain 11 other cases, some of which group themselves together, where no reasonable connection can be traced.

As to nationality, 28 cases were in French, 14 in German, 12 in Irish, 1 in English, and 8 in American families.

Vaccination was uncertain in 7 cases, in 23 there had been no vaccination. There had been previous vaccination in 33 cases, though 8 of these had not been vaccinated since childhood.

In the 5 fatal cases, all adults, 3 had not been

vaccinated, 1 not vaccinated since childhood, and 1 was uncertain.

Much more of interest in connection with the management of the outbreak and the manner of carrying on the work might be mentioned, but an apology is already due for having occupied more than the time allotted me.

A STUDY IN ABNORMAL PSYCHOLOGY.

BY GEORGE M. PARKER, M.D., NEW YORK.

(Concluded from No. 9, p. 245.)

III. Yet withal this bare analogical tracing of a developmental curve in the mother's history, we have not touched upon the intrinsic psychic mechanism of the change. In the individual attack, in the initial attack is to be found the key to this mechanism. For this material one must turn to the patient. No other can give that which is wanting.

She was a singularly prepossessing girl, in no way suggestive of the so-called hysteric. Tall, well developed, ruddy and apparently well. Her manner was quiet, her speech was careful, its content accurately given, dispassionately rather than emotionally toned. Indeed, there seems indifference if not aversion towards speaking of the past year's history. Here the point of attack was not so much the verification of the mother's anamnesis as a determination both of the primary dissociated elements making up the lower level consciousness and the mechanism of this psychic phenomenon.

To acquire this meant taping the level; *i. e.*, there must be artificially produced that condition wherein the upper, the normal consciousness should be so narrowed as to allow of the emergence of the lower, dissociated elements.

Such conditions were embraced in the ordinary distractive measures, attained in this particular case by fixing the attention upon a persistent, monotonous, dull sound. She was told to close the eyes, looking into them, noting the come and go of the photisms, then commanded to tell whatever there she saw, be it relevant or irrelevant. Under these conditions there was quietly recited to her all that had occurred just previous to the actual shock. It was recited to her with particular emphasis upon the visual picture, throwing into the narrative all possible representative sensory elements.

As she was thus looking there came a sudden start, an expression of horror passed over the face, the hands covered the eyes. For a moment she could not speak, then rapidly was described a terrible vision, a vision set as though in a medallion wherein was a boy's head, a head dissevered, bloody, mangled. The medallion had been seen for a few seconds before the boy's head was seen therein, it having displaced another face, the face of a girl.

The face of the boy was not at first recognized, but presently she screamed, "It is A——, it is A——. I remember all for I see all." Trembling, frightfully agitated, she described then the entire initial series of the morning with a detail which the mother in no way had attained.

The medallion had been engraved upon the cover of a book at the moment of accident, unopened in her hand. The face of this girl had been displaced by the decapitated head of the boy friend. Then followed a description of the entire morning beyond the initial shock, with episodic landmarks in the successive reappearance of the head. During these hours she had felt often as though about to fall. Ever there was appearing, disappearing, reappearing, the gruesome medallion.

Arriving at the first complete attack, that attack occurring while alone in her room, again the same procedure was used as in obtaining the first entrance upon the lower level consciousness. The emergence of the content proceeded in the same manner; the expression of horror, the attitude of revulsion, the scream, all terminating in a state of quiet. The content showed this attack as following directly the chance presentation to her vision of the medallion as it showed upon the book. The latter part of the attack was not recoverable; "it seemed as though I had slept" was her comment upon this.

So ample are these accounts, taken at the moment of their emergence, that even to skeletonize them would be needlessly wearisome. It will be sufficient to mark out the generalizations, for in all attacks certain elements appeared, a certain mechanism was ever to be seen varying only as the underlying state varied.

Each attack was preceded by that which we may call an aura, with due reservation as to the future definition of this term in this connection.

This aura appeared as the vivid representation of the decapitated head within the medallion. The appearance of this aura, at first, was associated with certain environmental stimuli, as the locomotive shriek, the white carnation, red blotches, etc. Later its appearance depended only upon conditions of distraction.

With and continued beyond the aura was the immediate emergence of the initial fright, the horrible scene, the revolting details. Early in the course this period was terminated abruptly by the falling asleep, here the content, at times, being irrecoverable.

As the evolution continued the aura brought with it a more brief emergence of the immediate material of the shock. This was a relative difference, however, for even in the latest attacks all the primary experience was reinstated, but as well in direct ratio to the increased frequency of attacks was the extent of the emergence greater. That is, the increment of dissociated material occurring with each attack tended in successive attacks to reappear in whole or in part; hence the revival of this content showed it to have increased progressively with a relatively lesser prominence of the content of the initial attack.

As the work was continued there appeared closely associated masses of past experiences antedating the attack, experiences of which she hitherto had been amnesic. In this emergence in organized form they resemble the content of the

latest attacks, attacks characterized by a high degree of automatism in which the patient had wandered about for hours in a state of dissociation. The revival of content appeared more as a complete page of individual history in which the individual had acted as a social unit, had reacted to the complexities and exigencies of social life, yet of all being amnesic. Ranging back from this level of dissociative mental functioning to that represented in the initial attack, the findings repeat the thema of growth and evolution. In the foregoing amnesia has been but implicitly mentioned, although making up an essential element in the so-called attacks. The work upon individual attacks defined and qualified most accurately the extent of the amnesia and its progress. At first, its limits were the limits of the attack, its proximal point the aura, its distal point the awakening. Then came, within two weeks, a retroactive amnesia.

Its mechanism was peculiar. A friend from her home town had called. They chatted of their old friends, of the old times. As the friend left the room, she had an attack. Following this, the retroactive amnesia for the first time appeared. She could not recall her caller, did not know him, while the environment, in which he with her had been reared, as well was lost.

All disappeared en bloc. Its reappearance was en bloc. Under the experimental conditions, previously outlined, there came to her the face of her one-time friend. Immediately all the circumstances of the lost meeting were reinstated in fullest detail. As she was detailing the conversation suddenly she exclaimed, "Why, we were speaking of M. S. Oh, I remember her so well, now. I can see her as she was when I last was with her. Why, I remember her brother, her sister, her father, their home. I can see it all. Other places are beyond hers,— lawns, trees, houses, a wide street, heavily shaded. It is East Avenue. I remember it perfectly," and the flood of memories poured on. It was literally a flood; people came not singly, but each, as it were, enveloped with others, not as massed particulars, but as generals made up of organized particulars.

The richness, the profusion, the sense of the present moment appalled her. She herself was there as the series emerged; always she had seen them just as they now appeared; she had lived, had moved here; again she was living, moving in that hitherto lost environment.

All content obtained began with the reappearance of those persons about whom she and her friend had chatted upon that day. Always from these personal nuclei associative bonds extended out farther and farther into the social milieu, beginning with individual, the family terminating only within complex social groups. We can view this order as the inverse of that whereby the conditions obtained.

Thus about these nuclei there gradually had been lost a vast series of first complex, loosely woven associations represented by the interrelated social groups of the entire town, then by the lesser social bodies, these more simple, more familiar, the family friends. Following these had come the disorganization of the more firmly bound, the more fundamental, the more truly personal associations, all these dropping to the lower level as the dissociation had proceeded until of the formerly rich complex much or all was lost. From this point the retroaction made headway into the past. A single dissociation inevitably dragged in its wake a mass of gradually increasing material.

Viewed as a whole, however, the loss was localized. It did not include all things and events within certain time limits. This mass or that mass might be completely lost, yet of others no amnesia presented.

The dreams were the ground upon which this amnesic past appeared. They were but nocturnal attacks. The head, medallioned, would appear, with all its gruesome train. These were the horrors, the part which never could be recalled. Their connection with other dream content might be loose, it might initiate, it might terminate, but always it presented, always it remained lost.

Other material, utterly lost to her by day, appeared at night, unrecognized as anything other than the ordinary stuff of which dreams be made. All that part involved in the retroaction continually appeared. They were experimentally revived, developed, their sequence shown in dream after dream.

The organization of the dreams was shown to have increased. The content of the first dreams, those coming just after the accident, was repetitive of the horror, practically all other content being excluded. As the dissociated material increased, however, in size and organization this added material was refracted through the dream states. They became long, involved, repetitive and continuous. The night no longer rested; there was an activity as real as that by day. Fatigue not recuperation was the tone of the awakening moment.

Far more serious was the production of affective states. Irritability, unrest, depression supervened in the morning. It was demonstrated that these were the direct results of immediately preceding dream states. So close did these states approach the upper level in the mornings that their affective tone percolated, coloring the waking state, while the real basis of all this lay just without the normal field. By this potential propinquity, by this increasing infringement upon the upper level, a denuding was taking place.

Instead of habitual reactions, strange automatisms appeared; instead of interest, attention, conation, there seemed an utter loss of focus, or, if attained, of but momentary duration. Unrest became fear, irritability became excitement, depression approached melancholy. Her introspective accounts were most clear upon this. In her words, she lived upon the thinnest of support. It seemed as though about to crumble at any time. Always there was fear, fear of something unknown, something about to happen. She dared not to go from her mother. An appre-

hension of losing her parents as she had lost her past filled her with anxiety. Only as she saw them did she feel that she knew them. For all others, for all places, there was no sense of personality, no reaction to them or it, no "present sense of pastness."

IV. With the entire scene thus thrown forward in the mother's simple descriptive account, in the succeeding analogical formulation and finally in the direct illumination cast upon this from the patient's secondary states there is little difficulty in tracing the movement, the action of the central and focal part.

A sudden intense emotional shock, a psychic trauma, brought about a break in the stream of consciousness, a dissociation. That this was slight, extremely short, matters not. The break had occurred. At this moment she had before her a book upon which was graven a medallioned head, a head and neck. At the moment of break this sensory element, the medallioned head presented; it was the last element present before the break. At the moment of dissociation, when the neighbor had so abruptly described the horrible scene of the decapitation, this medallioned head formed the peripheral basis of the hallucinated, mangled head of the boy and as such constituted the primary element of the dissociated content. Hence its double relation to both states, hence also its invariable appearance before each attack. As such it has a clear claim to the term aura.

At first these attacks followed stimuli bearing a close associative relation to the initial content, such as the shriek of a locomotive, the rumble of cars, the white carnations, the color of red. Later, by reason of increasing organization, conditions favorable to distraction, to the narrowing of consciousness allowed of the emergence of these subconscious states, always, however, with the same aura of the medallioned, mangled head.

The content of this dissociated, amnesic material is a study in organization. At first sharply localized and defined by the limits of the accident, it accrued in each succeeding attack. Within two weeks from the initial dissociation retroaction began. Its mechanism was peculiar and is possible of interpretation only by a study of the manner of reappearance of these memories in the experimental hypnoid states. Here the emergence of this dissociated content began primarily with the reappearance of a particular, the boy friend, bound with which particular was a mass of other closely organized particulars represented by his family, friends, home, etc.; thence it proceeded from these simple groups to those of increasing complexity. From this it would seem that the retroactive amnesia began about a focal point represented by the boy friend. The attack following his visit was succeeded not only by an amnesia of his call but by an amnesia of him as a particular content and other particulars associated and grouped about this in the past life of their home town.

From this point on the organization increased as seen in the greater frequency of attacks and their more ready occurrence, in the length of individual attacks, and finally in the higher degree of automatism. The infiltration into the dream states became coincidentally greater. The initial element, although always present, became relatively less prominent because of the increasing mass of material which nightly appeared and came to produce, in the latter stages, the attacks of depression and melancholy presenting in the morning. Towards the latter part of the year, so far had the organization proceeded that a constant narrowing of consciousness showed itself in the beginning of a continuous amnesia which gradually increased. Although we see here no secondary personality per se, it is evident that a denuding was proceeding, a stripping off that content which goes to make up personality and relation.

Thus between the two points, the initial dissociation and the denuded personality is a continuum traceable in all its manifestations as an organized subconscious state bearing the mark of growth and development. The history suggests it, analogy supports it, while the experimental hypnoid work, by its reclamation of the dissociated content, by the re-synthesis thus obtained, hence by the re-establishment of the normal stream of consciousness, has afforded the final proof, objectively to be verified in the subsequent continuance of health and a normal state in the patient.

Medical Progress.

REPORT ON PROGRESS IN PATHOLOGY.

BY JOSEPH H. PRATT, A.M., M.D., BOSTON.

THE NATURE OF DIABETES INSIPIDUS.

An important study by Meyer[1] on diabetes insipidus and other conditions characterized by polyuria has recently appeared from Friedrich Müller's clinic. It throws light on the physiology of the kidney, and contains much that is suggestive in the methods employed for determining the functional changes in renal disease, and it indicates the importance of cryoscopy in the diagnosis of at least one affection. Meyer has found that diabetes insipidus is a primary polyuria due to a loss by the kidney of its power of producing urine of normal concentration. As the kidneys in this disease cannot produce concentrated urine larger amounts of water are required than normal in order to eliminate through the kidneys the end-products of metabolism and the amount of urine is thereby increased. Normally changes in the diet are followed by changes in the concentration of the urine. This is not possible when the concentrating power of the kidney is seriously disturbed, and hence, in order to preserve the equilibrium of the body fluids, it follows that in diabetes insipidus changes in diet are followed by greater variations in the amount of urine than is the case when the kidneys are healthy.

[1] Deutsches Archiv für klinische Medizin, 1905, lxxxiii, p. 1.

Up to the present time there has been no uniformity of opinion as to the nature of diabetes insipidus. Dietrich Gerhardt in his monograph in Nothnagel's System defined it as "a long-continued morbidly increased elimination of sugar-free urine, which is not the result of renal disease." Definitions by Senator, F. A. Hoffmann and others were equally unsatisfactory because they were negative and guarded in their expression. The grouping of cases together under one head because they had a single symptom in common, even though that symptom were an important one, was recognized as dangerous. One set of writers have concerned themselves largely with the query whether the increased thirst or the increased passage of urine was primary, another group have dealt with the etiological moments and have asked whether the influence of the nervous system on the elimination of urine as shown by the experiments of Claude Bernard and Eckhard on animals could explain in man the pathologically increased secretion of urine.

Five cases of diabetes insipidus were investigated. The molecular concentration of the urine was found to be very low. For ascertaining this Beckmann's apparatus for determining the freezing-point was used. In one case the freezing-point varied between — 0,22° and — 0,17°. It was always much lower than the blood whose △ was normal,— 0,56°. In spite of the low concentration the ions and molecules in the day's urine equalled the normal amount. This was determined by estimating the valence value (*Valenzwerte* of Strauss), which was always found to be normal. The valence-value is obtained by multiplying the twenty-four-hour by the molecular concentration of the urine. Tallquist had previously noted in a case studied by him the remarkable constancy of the concentration of the urine with different dietaries. The cases studied by Meyer in which urine was passed in largest amounts showed the slightest changes in the concentration. Nitrogen in the diet acted as a diuretic. Sodium chloride taken per os had a similar though more marked effect. Both exerted a greater influence on the amount of urine than they do in health. One patient on a mixed diet passed 13,300 cc. of urine in twenty-four hours. A few days later on a fat-carbohydrate diet consisting of potato-purée, butter, cream, sugar, bread and tea he voided 7,600 cc. and the following day 5,900 cc. With the addition of meat to the diet the quantity of urine rose promptly. That the observations of Tallquist and Meyer are of value in the diatetic treatment of diabetes insipidus is evident.

The diuretic action of theocin was tested. This belongs to the caffein preparations, which v. Schröder has shown to have a specific action on the renal parenchyma similar to the other purin bodies. In diabetes insipidus Meyer found that theocin produced little or no increase in the amount of urine. In all cases, however, the elimination of sodium chloride by the action of this drug was greatly augmented. The increase in concentration of the urine was considerable in those cases in which the amount of urine was not increased at all. The action of theocin must produce changes in the kidney which have the same result as the altered circulatory conditions in fever, for both lead in cases of diabetes insipidus to the elimination of a concentrated urine. Dreser has recently shown that in healthy individuals theocin leads to an increased elimination of salts as well as of water.

The constant composition of the body fluids is maintained in health by variations in the amount and concentration of the urine. Slight changes in the composition of the blood, such as are produced by alterations in diet, are regulated either by changes in the amount or changes in the concentration of the urine. If the material to be eliminated is added to the blood in large amount both variables are brought into play to bring back the composition of the blood to the normal. As a result there will be a marked increase in the quantity of urine and the concentration will be higher than normal. This is seen in the convalescence from diseases in which products of metabolism have been stored up in the body. The epicritical polyuria in pneumonia is an example. During the height of pneumonia besides coagulated serum albumin and purin bases large amounts of sodium chloride are retained within the body. When the stage of resolution is reached these substances are thrown off from the body and exert a diuretic action. Although large amounts of urine are excreted the concentration is increased, and hence the valence-value is very high.

The results of Meyer's study show that in diabetes insipidus the polyuria and not the polydipsia is primary, thus settling a much-disputed point. The increased elimination of water from the body leads to increased thirst.

Korányi speaks of a concentrating and a diluting power of the kidney. In nephritis parenchymatosa both the concentrating power and the diluting power are markedly diminished, in nephritis interstitialis the concentrating power is less impaired and the diluting power is nearly normal, while in diabetes insipidus the concentrating power is lost and the diluting power entirely normal.

In the primary polydipsia of hysterical origin reduction of the water ingested leads to an increase in the specific gravity and in △, because the concentrating power of the kidney is normal. In true diabetes insipidus cutting down the amount of water leads to serious general disturbances, as in a case studied by Strübell. In Loeper's patient when water was withheld the freezing-point of the blood fell from — 0,56 to — 0,63. Blood of this concentration is only seen in severe nephritis, and then rarely except in uremic conditions.

CLINICAL STUDY OF DIABETES INSIPIDUS.

Futcher[3] presents a clinical report of nine cases of diabetes insipidus. In fifteen years

[3] Transactions of the Association of American Physicians, 1904, xix, p. 247.

seven cases of the disease were admitted to the Johns Hopkins Hospital and Dispensary out of a total of 403,555 patients. Of 17,042 cases admitted to the medical wards there were six cases, or 0.03 %. Four of the nine cases studied by Futcher belonged to the idiopathic group and five to the secondary or symptomatic group. All of the latter showed striking cerebral manifestations, and four out of the five were certainly luetic in origin. The syphilitic lesion may be a gumma, involving some portion of the base of the brain particularly the floor of the fourth ventricle.

(To be continued.)

Reports of Societies.

AMERICAN MEDICAL ASSOCIATION.

SECTION FOR PRACTICE OF MEDICINE, HELD AT PORTLAND, ORE., JULY 11, 12, 13 AND 14, 1905.

(Concluded from No. 9, p. 256.)

DR. CHARLES P. EMERSON of Baltimore, Md., read a paper entitled

CYLINDRURIA.

Epithelial casts, the author said, were sometimes most significant. They were, if they consisted, as was sometimes the case, of fragments of kidney tubules, which were broken off and were excreted in the urine. Not infrequently the lumen of these tubules could still be seen, leaving no doubt of the origin of the cast, and of the serious pathological condition at work. Most so-called epithelial casts were only hyaline casts, on which were gathered a few cells with round nuclei. Some of these cells were not of renal origin. Even if one cell clung to a hyaline matrix it would be sufficient to constitute an epithelial cell. Pus casts and blood casts were also said to be of special significance, but they occurred often in temporary conditions, such as after severe athletic exercise, or after unaccustomed exertion. In certain conditions there occurred what had been described by the very picturesque term of "showers of casts," a sudden elimination in the urine of a great many casts. In diabetes the occurrence of a shower of casts indicated that diabetic coma was about to assert itself. Many of these casts were of finely granular character, and sometimes there was no preceding sign of kidney trouble. It was sometimes said that fine granular casts were a stage of nephritis subsequent to coarsely granular casts. This observation in diabetes seemed, however, to disprove this. True hyaline casts were much rarer than they were reported. It required careful adjustment of the light of the microscope to enable the observer to see them. They were almost exactly the color of the fluid, and escaped observation.

Waxy casts were not so infrequent as had been imagined, although their significance was not clear. When they were yellowish they looked exactly as if they were composed of beeswax. The lighter-colored ones reminded the observer very much of paraffin. Fatty casts occurred frequently in the nephritis due to malaria. How serious might be the significance of waxy casts might be gathered from the fact that they could be best observed in the urine of bladders abstracted post-mortem. It seemed not unlikely that some serious agonal condition was responsible for them toward the end of life. In eleven cases in which casts were present leading to the diagnosis of nephritis the autopsy showed only a chronic passive congestion. The autopsies were carefully made and there was no sign of nephritis, either macroscopically or microscopically. In 23 cases in which casts were rather abundant in the urine only cloudy swelling was found to be present post-mortem. It was not as yet decided whether this represented a stage of inflammation, but certainly the kidneys in these cases could not be considered to be suffering from true nephritis. Casts were most abundant in acute nephritis. In these cases epithelial blood and pus casts were most common, although after a time coarsely granular casts were found, and only later do the finely granular casts occur. Acute exacerbations of chronic kidney disease presented the same picture as acute nephritis and an abundance of casts. On the other hand, in chronic nephritis casts became much rarer. In the large white kidney, representing chronic interstitial nephritis, the larger the kidney, the more casts. In the large and small red kidney of arterial sclerosis casts were rather infrequent, and were not especially significant. Amyloid disease was present in 18 cases under observation at the Johns Hopkins Hospital. Most of these presented few casts; two of them had no casts at all, although in 9 cases altogether the casts were important. In 2 cases waxy casts were present, but very few casts showing the true amyloid reaction.

Casts predominated then in acute conditions of the kidney. The better the condition of the kidney, just before the irritant entered it, which caused the casts, the more casts would eventually be present. In diabetes without preliminary nephritis there might be a shower of casts with an enormous number of them, and any diffuse kidney condition due to irritation might produce a like effect. Athletes, especially bicyclists, foot-runners and oarsmen, often had a large number of casts in their urine just after they had undergone severe exertion. The kidney seemed after a time to get used to the irritant present in the system, and then the casts ceased to appear. The sudden exertion produced materials which irritated the healthy kidney into a reaction that looked like a pathological condition.

Certain food stuffs, as asparagus, had a definite tendency to give rise to casts in the urine. Most of the spices, and especially mustard, had the same effect. On the other hand, salicylic acid, even in ordinary doses in susceptible subjects, might give rise to casts. In one person under observation at the Johns Hopkins Hospital the presence of casts seemed to be a mysterical manifestation; although they had been seen at intervals for many years, no serious effect had followed, and it would seem to the author as though the condition which they represented was not distinctly degenerative nor progressive.

DR. PHILIP KING BROWN of San Francisco read a paper on

THE RELATION OF KIDNEY CONDITIONS TO PUERPERAL ECLAMPSIA.

This author had studied the analyses of 54,000 births. In 105 of these births some symptoms of eclampsia developed. Most of them were hospital cases, hence the proportion of eclampsia was higher, for many of the patients were admitted to the hospital because of the development of eclamptic symptoms. In 18% of all these eclampsia cases true nephritis was not present, but only renal irritation. The connection between the kidney and eclampsia was by no means as clear as used to be thought, and the fact that albumin and casts frequently appeared during pregnancy did not at all necessarily signify that nephritis was developing. The strain the kidneys were undergoing resembled that which they were subjected to in the severe exertion of athletes, and so it was not surprising that casts and

albumin should be present. Thyroid enlargement was quite common in pregnancy, and this seemed to be due to the fact that greater calls were made on the functions of this gland, which it was sometimes not able to meet except by hypertrophy. At times sufficient thyroid substance was not prepared and consequently an intoxication resulted. Dr. Brown had found that, according to certain observers, if one fifth of the thyroid glands be removed from pregnant cats attacks developed which were not unlike those of eclampsia. As a matter of fact, the only connection between the kidneys and eclampsia was the similarity of eclamptic attacks to uremic seizures.

Ordinary observations on the amount of urea in cases where eclampsia was threatened were not likely to be of much service. In certain quite normal cases there was a decrease of the urea toward the end of pregnancy. The present methods of estimating urea did not give sufficiently definite information. The reduction in urea excretions by no means indicated a danger signal. As to other theories regarding the origin of eclampsia, the most prominent were those which associate with changes in the liver and in the placenta. In quite a few cases the changes in the liver found in eclamptic subjects were quite as marked as those found in the kidneys. Animals with hepatic fistulæ had not infrequently suffered from an intoxication resembling uremia. Hence the supposed connection of the liver with eclampsia. Relative to the placenta, recent observations would seem to show a marked change in that organ in patients who have died from eclampsia. The serum of the child in eclamptic cases was hemolytic for the maternal blood. It would seem as though certain affections of the placenta might be reflected in the mother's condition. Some observers considered eclampsia due to a general disturbance of metabolism. Just as diacetic acid caused diabetic coma, so some as yet unknown substance in the circulation might cause eclampsia. The author had found that the muscles of pregnant guinea pigs were much more excitable than those of animals under ordinary conditions. Irritants which produced no effect at all on the muscles of non-pregnant animals would set the muscles of the pregnant animal in a state of spasmodic contraction. This was a contributing cause to the eclamptic convulsions. The muscles of the pregnant woman were much more irritable to irritants of almost any kind, and consequently the convulsions occurred.

THE DIETETIC TREATMENT OF NEPHRITIS.

DR. FREDERICK C. SHATTUCK of Boston, in a paper with this title, stated that drugs were absolutely powerless to affect the kidneys; hence there was need for treatment without medicine. The kidney in nephritis needed rest more than anything else, but absolute rest was impossible, because the remainder of the system could not stand it. There must, however, be just as little kidney function demanded as was possible. This limitation of the kidney function must be kept up for as long a time as was possible without injuring the individual. It was easy to make mistakes in the application of this rule, and for twenty-five years almost universal acceptance of a rigid milk diet for nephritis was a mistake. The other mistaken notion was the encouragement of too much water. Water was considered to be the best diuretic and caused a flushing out of the system. Unfortunately, however, the water did not always find its way out through the kidney, and consequently there was an increase of blood pressure, which made conditions worse than they were before. The most important indication in acute nephritis was to enable the patient to tide over the crisis when kidney elimination was at its lowest. This could best be accomplished in previously healthy persons by absolute starvation for several days. When the kidney symptoms began to remit, a quart of milk in the day might be allowed, and cereals and fats allowed in moderate amounts to keep up the nutrition. There were some curious contradictions as to what was allowed patients. Some authors absolutely prohibited alcohol, yet encouraged the use of kumyss and other preparations of this kind which contained from 5 to 6% of alcohol. The diet should be increased as the patient grew better, but animal broths should be allowed last of all, because these contained very little nutritious material and a large amount of extractives, which were decidedly irritant for the kidneys. Acute exacerbations of chronic nephritis must be treated the same as acute nephritis. Owing to the presence of chronic nephritis for some time, the patient was not in as good condition, and consequently the starvation could not be so absolute nor so protracted. In all cases there must be a great limitation of diet, and this must be kept up as long as possible consistent with the maintenance of the patient's strength.

Studies in the pathology of the kidney had been many, yet no classification of kidney tissue was entirely satisfactory, hence the need for using the clinical distinction in reference to dropsy. Where dropsy was present the heart was usually insufficient, and less water must be given than under other circumstances. Diuretin was an excellent aid in the diagnosis of the origin of dropsy in these cases, and, taken in doses of 15 to 20 grs., three times a day, it never failed to act favorably on cardiac origin, while it had no effect on extra-cardiac dropsy. This was the experience of the essayist.

The most important thing in the treatment of nephritis was careful individualization. In theory a treatment might be very good, but worked very bad in practice in a particular case. Diet lists in general found their best resting-place in the fire. Other organs must always be considered as well as the kidneys. The doctor must be his own prescriber of foods as well as drugs. Common sense must be his important guide. In all cases the amount of fluid ingested must be regulated by the amount which was excreted in the urine. As soon as there was any tendency to accumulate, then the fluid taken must be lessened. The speaker had for some twelve years rather favored the idea of a varied diet than of too rigid a dietetic regulation. The only thing that could be said in favor of the limitation of red meat was that it limited the total amount of meat taken. After a time, if a man could take only the breast of chicken, this would pall on him so much that he would eat very little indeed. Dr. Shattuck favored allowing any colored meat once a day, according to the state of a patient, and fish and eggs at the other two meals. More kidney patients suffered from insufficient food than from too much food, once their nephritis had been discovered and their attention drawn to it. Spices should be forbidden, but all green vegetables and fresh fruits were good in season.

In conclusion, the author stated that the treatment of nephritis was not by drugs, but by diet. Drugs might be used for symptoms or for the heart, but not for the kidneys. The kidneys must be spared all unnecessary work. Acute nephritis and acute exacerbations, or chronic nephritis, must be treated by starvation to the extent of a patient's strength, and the quantity of food was more important than the quality of the food, and a little alcohol could sometimes be used to decided advantage. A varied diet was better than a rigid dietary, and the amount of albumin was no guide to the diet.

DR. JOHN A. WITHERSPOON of Nashville, Tenn., in opening the discussion, stated that the most promising feature of kidney disease was the recuperative power

of the kidney. The general teaching was that there was little recuperative power, yet desperate cases got better. Much of nephritis was of the infectious and circulatory type rather than of degenerative origin. Undoubtedly the clinical condition of the patient was more important than the results of the urinary examination. In treatment, the danger signals must be watched. Drugs were disappointing, but often helpful in emergencies. A varied diet would keep up the resistive power, and if the patient was not scared to death the outlook was much better than had usually been considered. Medicine played but a small part in the treatment of disease, and particularly of kidney disease, and therefore more attention should be given to diet and general management.

DR. W. OPHÜLS of San Francisco pointed out that a large amount of albumin and casts of any kind might be present in the urine and still no lesions noted, either microscopically or macroscopically, beyond congestion, which could give rise to the conditions found. It seemed evident to the speaker that the eventual classification of kidney diseases would be based on gross pathology.

DR. L. DUNCAN BULKLEY of New York stated that he suffered from acute nephritis in 1869, and had for a time very dark-colored urine, with large amounts of albumin. His symptoms continued for months, and he had to abandon work. He has since had several severe attacks, one of which he had several years ago, while on a trip to the Yellowstone Park. At this time his urine became almost coffee-colored, and contained a large amount of sediment. His only treatment was milk for a few days, and then a gradual resumption of a varied diet. Notwithstanding an apparently bad diagnosis, he had continued to enjoy reasonable health, and had been able to do a large amount of work. He emphasized the importance of knowing just what the kidneys were doing day by day, and the frequent testing of the urine. He considered milk an extremely important agent in the treatment of nephritis, but said it must be taken according to definite directions. It should be taken when the stomach was quite empty, usually about an hour before meals. In his experience, if taken warm and slightly diluted, it never disagreed. When mixed with other foods, milk always disagreed with him.

DR. G. W. MCCASKEY of Fort Wayne, Ind., said that he had been impressed years ago with the fact that patients suffering from nephritis became emaciated more from limitation of their diet than from their kidney affection. Seven years ago he made a gradual return to the ordinary diet. With regard to meat, his rule was that if under a meat diet the excretion of urea went up, then meat might be allowed. A vital point in the treatment of kidney disease was the management of the gastro-intestinal tract. Kidney disease originally was due to intestinal toxins, and they must, as far as possible, be eliminated. Even local treatment of the stomach might be of importance in nephritis. Dr. McCaskey considered that the presence of albumin was a stronger indication of degenerative disease than the presence of casts.

DR. WOODS HUTCHINSON of Portland, Ore., did not think that Bright's disease was primarily a disease of the kidneys, but often the result of an arterio-sclerosis or fibrosis due to the action of toxins, and the kidneys suffered from their attempts at elmination of these. Milk as a food in nephritis was injurious because it swarmed with bacteria. Any diet which diminished the amount of intoxication in the tissues and built up the patient's strength was the one best fitted in cases of nephritis. Milk produced a heavier percentage of work for the kidney than almost any other agent. Most of the milk ordinarily consumed contained more bacteria than sewage. The greatest care must be exercised in limiting the number of bacteria in the intestinal tract. The intoxication must be diminished and the patient built up.

DR. A. P. FRANCINE of Philadelphia referred to the work done at the Phipps Institute, saying that in a series of 53 cases of pulmonary tuberculosis only one kidney was found to be normal, and in 34 of them evidences of tuberculosis were found. Giant cells and caseation were present before the diagnosis was made. In all the other cases at least cloudy swelling was present. The effort of the kidney to eliminate the toxins and also the bacteria of tuberculosis gave rise to this nephritic condition, which must be considered as one of the elements of severe tuberculosis.

DR. JAMES J. WALSH of New York City said that if the preliminary stage of nephritis could be recognized, and care taken of patients, then a great saving of life would surely be an accomplished fact.

DR. FRANK BILLINGS of Chicago said that the toxic condition which led to nephritis existed independently of the kidney. Its effects were sometimes seen upon the eye or upon the brain before there were any kidney symptoms. A man might die from apoplexy due to Bright's disease without there having been any serious involvement of the kidney. There might be cardio-vascular changes without nephritis. This condition must be treated, therefore, not by the indications found in the urinary symptoms but from the clinical observations of the individual's general health. Cardio-vascular and degenerative changes in other parts of the body might give expression in the urine.

DR. JOHN H. MUSSER of Philadelphia pointed out the importance of making complete examinations of the urine in order that one might lay down proper dietetic treatment, make a study of the nitrogen output, and a study of the elements found that were secondary to putrefactive changes occurring within the intestinal tract. The diagnosis of Bright's disease should only be made after the patient had been in bed for some time. This was especially true in cases in which gastroenteroptosis had been present. With regard to the urine found in autopsy, the significance of any formed elements in it could not be considered of value, since they were the result of death processes.

DR. H. M. FUSSELL of Philadelphia desired to sound a note of warning relative to urinary examinations, saying that if it was said that albumin and casts occurring in the urine did not mean a nephritis, the general practitioner might say, Why examine the urine at all? It was of the greatest importance that the urine be carefully examined, and in a routine manner, in order to determine the presence of these danger signals.

DR. LOUIS LEROY of Nashville, Tenn., said that there had been too much confidence in urinary examinations, but they must not be disregarded. He thought that the future classification of nephritis would be based upon the etiology. He had found many kidneys doing functional work well, and yet with certain of the pyramids the seats of advanced degenerations. He urged and advocated the use of boiled meats, which were rid of their extractives, which had such an irritating effect upon the kidneys. The difference in the prognosis of kidney cases was undoubtedly due in many instances to the fact that portions of the kidneys sometimes remained healthy after other parts were giving the most serious signs. Nothing was more striking than this variation in the extent of pathological appearances in kidneys when seen at autopsy.

DR. J. A. LICHTY of Pittsburg spoke of the value of the sphygmograph in estimating the blood pressure, and said, among other things, that in sphygmomanometric absorptions the increase of blood pressure gives the earliest hint of nephritis. Undoubtedly the recog-

nition of the toxic conditions causing the rise of blood pressure might also be possible. In blood-pressure studies and bacteriology apparently the future of our knowledge of nephritis belonged. Notwithstanding the extensive study of the subject little had been discovered that was of practical value, but the outlook was encouraging.

DR. STENGEL, in closing the discussion on his part, said that while acute interstitial nephritis was not uncommon, it never became inveterate, and developed chronic interstitial nephritis, though this might be expected from the names. Chronic interstitial nephritis was a cardio-vescular incident. Unfortunately, there were some who in the presence of the classical tripod of urinary symptoms, abundant urine of low specific gravity and some albumin, thought only of nephritis, and neglected the arterial condition.

DR. BROWN, in closing the discussion, said, relative to the development of nephritis, not only the toxins of the digestive tract must be considered, but also those of perverted function in other organs, and of disturbed metabolism generally. The thyroid and other ductless glands doubtless played an important rôle in systemic conditions that might lead to nephritis and to simulating affections.

DR. W. E. MUSGRAVE of Manila, P. I., read a paper entitled

SYMPTOMS, DIAGNOSIS AND PROGNOSIS OF AMEBIASIS IN THE TROPICS.

The subject was discussed by him under the following clinical divisions: Latent and masked infections, mild and moderately severe cases, severe cases including gangrenous and diphtheritic ones, infection in the children and in the aged. The clinical form changes from the one to the other, and might do so several times during the course of the disease in the same patient. The amebic process in all was essentially chronic, but acute symptoms from concurrent or secondary infection by other agents were frequently observed. Constipation was a very prevalent condition in the tropics, particularly among women, and, as might be inferred, might frequently mask amebic infection in the early stages, and the late and less active forms until irreparable damage might have been done to the colon. The mild and moderately severe cases formed the great majority of those seen in Manila at the present time. A very noticeable thing, both in children and in the aged, as well as in natives of the Philippine Islands, was the great relative infrequency of liver abscess. He had not seen a case of liver abscess in more than one thousand clinical cases, and one hundred autopsies of natives of the Philippine Islands. The most important clinical manifestations in a question of diagnosis were the bowel evacuations, particularly their odor, and the presence or absence of blood. Abdominal soreness increased on pressure, and extending particularly along the colon, was most common, and, taken singly, was one of the most valuable symptoms. Its diagnostic importance was greatest when so-called indigestion was quite common. Loss of weight, especially in the presence of a good appetite, was quite important, and was the best guide to the progress being made by the infection. Neither one nor all of these symptoms taken together were sufficient for an absolute diagnosis, but when taken collectively, in cases where careful palpation revealed a thickened, tender colon in places where it might be felt, this made the nearest approach to a sure diagnosis, without microscopical examination of the feces.

The author drew the following conclusions:

(1) Intestinal amebiasis is a peculiarly ulcerative condition of the intestine caused by ameba coli (Losh), usually confined to the large intestine, though occasionally (seven in 200 cases) the ileum is affected and more often (14 in 20 cases) the appendix is involved.

(2) In the majority of cases the condition affects the entire bowel (159 in 200 cases), though it may be limited to one or more portions, most commonly the cecum and ascending colon (23 in 200 cases).

(3) The ulcers show a tendency to be undermined, due to the lack of resistance on the part of the submucous layer of the bowel.

(4) The organisms may enter the blood vessels very early in the disease and may be transported to the submucosa without lesions of the muscularis mucosa.

(5) The disease is a subacute, chronic inflammatory process, as shown by the character of the exudate and infiltration, by the early formation of granulation tissue and by the absence of leucocytic infiltration.

(6) Complete healing may be accomplished, or a condition of chronic atrophic enteritis or chronic catarrh may persist, known as sprue or psilosis.

MODE OF INFECTION IN UNCINARIASIS.

DR. CLAUDE A. SMITH of Atlanta, Ga., gave a lantern-slide demonstration, in which he showed the natural and artificial conditions under which the larvæ of the uncinaria develop.

DR. FRANK BILLINGS of Chicago discussed the subject of

RECENT ADVANCES IN THE PHYSIOLOGY OF HUMAN NUTRITION.

After saying there was no subject of greater physiological importance for the welfare of the human race than this, he said that how best to maintain the body in a condition of health and strength, how to establish the highest degree of efficiency, both physical and mental, with the least expenditure of energy, were questions in nutrition which every enlightened individual should know; yet even the expert physiologist was uncertain as to what constitutes a proper dietary for different conditions of life and varying degrees of activity. There were divergent views regarding the needs of the body as to the extent and character of the food requirements, as well as contradictory statements with regard to the relative merits of animal and vegetable foods. There was a lack of agreement regarding many of the fundamental questions that constantly arose in any consideration of the nutrition of the body. Especially was this true regarding the so-called dietary standards, or the food requirements of the healthy adult. Certain general standards had been adopted, but one was forced to the conclusion that these standards had an uncertain value when one saw instances of individuals living in apparent health under a dietary not at all in harmony with the recognized standards. We needed definite knowledge of the physiological necessities of the body for proteid or albuminous foods, those foods which we are accustomed to speak of as essential, or absolutely requisite for life. Have we, through years and generations, established the habit of taking undue quantities of proteid food which might be largely in excess of the physiological requirements of the body? If so, then we had to consider the possibility that an excess of daily food might be more or less responsible for many diseased conditions, which might be obviated by a more careful observance of the nutritional needs of the body. The definite information as to the real necessities of the body for proteid foods had recently been carefully studied by Chittenden and Folin, whose work and experiments had afforded a clearer view of the physiology of nutrition than we had hitherto possessed.

METHODS, VALUE AND LIMITATIONS OF THE KNOWLEDGE OF THE GASTRIC CONTENTS.

Dr. George Dock of Ann Arbor, Mich., contributed a paper with this title. The author thought that instrumental and laboratory examinations relative to the stomach were unduly neglected in practice, and many failed to make such examinations because they thought the passage of the stomach tube was difficult, although in his experience this was not so. Training and practical experience were necessary for its success. He said the absence of hydrochloric acid in cancer was frequent, but cancer might be present with hydrochloric acid preserved for a long time, and even in excess of the normal amount. But such exceptions and contradictions occurred in all branches of diagnosis, and they should teach us to discover other details. The author cited a number of cases in which there was not an excessive secretion by hydrochloric acid in gastric ulcer. Single or a few examinations were misleading. The value of estimations of hydrochloric acid he believed to be greatest in the functional diseases of the stomach, or rather cases in which the stomach functions were altered, without gross organic disease primarily in that organ, though there might be functional organic diseases in other organs that might have a part in the production of the gastric anomaly. Frequently it occurred with no gastric symptoms, or with trifling ones, but with distant symptoms. In functional diseases, the greatest help was often derived from frequent examinations for hydrochloric acid under various kinds of dietetic and other treatment. There was still room for further investigation in the methods of gastric chemical examination. The author uses largely Gunzberg's reagent. To determine the amount of hydrochloric acid, dimethyl-amidoazo-benzole was most satisfactory. For the total acidity the phenolphthalein reaction was used. Test for the combined hydrochloric acid was not necessary, as a rule. Of abnormal or pathological acids lactic was the only one requiring chemical tests, for acetic acid or butyric acid often occurred in large quantities and could be detected by the odor. The determination of pepsin was not necessary in ordinary work, since it was rarely absent when hydrochloric acid was present in sufficient quantities. The digestive functions could easily be shown by the biuret test.

NON-GASTRIC DISEASES PRESENTING GASTRIC SYMPTOMS.

In a paper with this title, Dr. John H. Musser of Philadelphia spoke of the symptoms of gastric diseases simulating various diseases of the stomach in certain affections, in intoxications, in organic disease of the brain and spinal cord, in diseases of the heart and blood vessels, of the lungs and the kidneys. He mentioned the significance of pain, vomiting, modifications of secretions, etc., in non-gastric disease.

Dr. Charles G. Stockton of Buffalo, N. Y., read a paper on

FOOD STAGNATION FROM ALL CAUSES.

The author said that this condition was one of the most important of all the gastric disturbances. The local symptoms were distress and sense of weight, sometimes pain, together with eructations of gas, regurgitation of the stomach contents, and often vomiting. Constitutionally there were usually found evidences of auto-intoxication from starvation. He divided the cases into two classes: (1) Those in which the stagnation resulted from depression of the motor functions of the stomach, without the presence of any actual obstruction; (2) those in which there was actual obstruction to the overflow of stomach contents, regardless of the kinetic energy of the gastric wall. After considering the causes of these two classes of cases, he said that the diagnosis was not difficult, and that it might be suspected when patients complained of eructations of food taken a long time previously. It could be demonstrated only by the use of the stomach tube. The motor power might be assisted by certain mechanical measures, especially by skillful massage over the region of the stomach, by trunk rotation and flexion, and by the alternate hot-and-cold douche over the epigastrium, and by external and internal faradization. Benefit undoubtedly followed the use of the simple carminatives, bitted infusions and temporarily the diffusible stimulants. Failure or success depended more upon general management of the patient, upon proper rest, exercise, recreation, diet, mental state, etc., than upon the mere local treatment of the stomach. In cases of motor insufficiency depending upon spasm of the pylorus from over-irritability of tissue, whether from hyperchlorhydria, hyperesthesia, or simple erosion of the pyloric mucosa, surgery should not be considered. The proper treatment consisted in lowering the acidity of the gastric secretions, soothing the gastric mucosa, and the selection of an unstimulating, liquid or very soft diet, which was free from all irritating particles. The fact was emphasized that a stomach on which a gastroenterostomy had been performed was by no manner of means as good as a normal stomach. But if an ulcer continued to give trouble, if pain and spasm frequently occurred, he recommended pyloroplasty, if the ulcer could be safely excised, otherwise gastroenterostomy. In benign hypertrophy of the pylorus, without ulcer, he advised operation, preferably pyloroplasty.

Dr. Woods Hutchinson of Portland, Ore., read a paper entitled

A TYPE OF TUBERCULOSIS ON THE NORTH PACIFIC COAST.

Reference was made by the author to a type of tuberculosis on this coast, particularly in Oregon, Washington, Idaho and Montana, which was marked by the following characteristics: A remarkably rapid course, running from three to nine months; a weak and rapid pulse, ranging from 105 to 145; a wide range of daily temperature, more subnormal depression than elevation, the morning temperature not infrequently being 95°, the afternoon, from 101° to 103°; rapid infiltration and board-like consolidation beginning in both apices, and extending toward the base with almost total absence of formation of cavities. If cavities were present, they were small and scattered; there was marked infrequency of pulmonary hemorrhage; there was slightness or absence of cough and other symptoms of pulmonary irritation. This type of tuberculosis was most frequent in the native born. He discussed at length the open-air treatment.

Dr. W. Ophüls of San Francisco followed with a paper entitled

COCCIDIOIDAL GRANULOMA.

The author stated that they had in California a peculiar form of oidiomycosis, of which so far no case had been described in people who had not been in his state, except the very first case of this form of infection, which was observed by Wernicke, in Buenos Ayres, and later and more accurately described posadas. The author of one paper established fully the morphology of the parasite in the tissues, and the nature of the lesions which it produced, but at that time, 1894, the organism was looked upon as a protozoon. This view of the animal nature of the parasite proved to be erroneous, in the course of the examination of a new case of this disease which occurred in 1900, when it became apparent that the parasite could be cultivated and developed in the cultures in the form of a molelike

growth. It probably belonged to the oidia, and he, therefore, proposed the name oidium coccidioides. The parasite in coccidioidal granuloma differed from the various fungi described in blastomycetic dermatitis; first, by the absence of budding during its development in the tissues; second, by its multiplication by endosporulation; third, by certain differences in its growth on artificial culture media. He said there were now on record ten cases of coccidioidal granuloma, to which he could add three new cases, making thirteen in all. In one of the cases reported a very remarkable feature was that tubercle bacilli and no other parasites were found in the adrenals, whereas no tubercle bacilli, but many iodia, could be demonstrated in the meninges. A great variety of lesions were produced by the parasite, and a great variety of organs were affected, and the clinical symptoms depended entirely upon the localization and intensity of the disease. So far no typical clinical picture could be given, but, in some cases there was a striking resemblance to tuberculosis. The most characteristic manifestations of this disease were nodules, consisting of granulation tissue at various stages of development, but in addition suppurative processes usually of a chronic character.

The author described the skin lesions which seemed to have been the primary seat of infection in some of the cases. The disease was almost restricted to California. The cases had been found at considerable intervals in San Francisco, in people coming from the country who had no apparent relation to one another. From what was known of the cultivation experiments, it seemed likely that the oidium occurred in nature, and caused infection only occasionally. The resemblance of the disease to tuberculosis was so great clinically and anatomically that the true nature of the cases was recognized only when a careful microscopical examination was made of the diseased tissues or of the pus in the lesions.

The Nominating Committee of the Section brought in a report recommending Dr. Herbert C. Moffitt of San Francisco, for chairman; for secretary, Dr. Joseph F. Miller of Chicago; and for alternate to the House of Delegates, Dr. George Dock of Ann Arbor, Mich.

On motion, the recommendations were concurred in and they were declared duly elected.

THE VALUE OF VARIOUS HEMOGLOBIN INSTRUMENTS TO THE GENERAL PRACTITIONER.

This was the title of a joint paper by DRS. H. M. FUSSELL and MARIUS B. MARCELLUS of Philadelphia, in which the authors called attention to the value of blood examinations in general. They used the Fleischl, Dare and Tallquist scale in this wise: The blood of fifty cases was examined with each of the instruments. Each examination was made with at least two individuals, and frequently by three or four individuals. This was done so that the different instruments might be used upon the same case to discover any instrumental difference and discern any individual difference in the use of the different instruments. It was found that with the various instruments the differences were as follows; Average differences between Fleischl and Dare, 3.3%; between Fleischl and Tallquist, 3.2%; between Dare and Tallquist, 3.3%. The personal differences were: With Dare, 1.85%; Fleischl, 2.9%; Tallquist, 1%. The greatest personal difference was with the Dare, 15%; Tallquist, 10%; Fleischl, 8%.

The authors presented the following conclusions:

(1) Any one of the instruments studied by us is sufficiently accurate for practical purposes.

(2) No practitioner should neglect to use one of these instruments, and the Tallquist scale is cheap and reliable.

(3) The Tallquist scale can be used for routine observation, and either of the other instruments for detailed or more accurate work.

(4) The Dare instrument is just as accurate as the Fleischl, and takes much less time to manipulate.

DR. HERBERT C. MOFFITT of San Francisco discussed the subject of

AFFECTIONS OF THE THYROID IN CALIFORNIA.

The author took the ground that affections of the thyroid, like aneurisms and early arterio-sclerosis, were more common in San Francisco than many other cities of the United States. Five per cent. of the young women entering the University of California in 1904 had enlarged thyroids. Since Jan. 1, 1905, the essayist had noted moderate enlargements in 75, and large goitres in 8 patients, out of 546. Fourteen cases were in men. This gave a percentage of 15.2 in individuals, nearly all of whom were native born, or who had lived in California for years. Of myxedema there were 53 cases from San Francisco, and 83 throughout the state. Thirteen had decidedly large thyroids, the myxedema resulting from changes in old goitres. Twice the condition resulted from operation on goitre. Emphasis in description was laid chiefly on skin, voice and mental changes and distrubances in locomotion. Three women had frequent epileptiform attacks which did not yield to thyroid medication, although the skin and mental conditions improved. Endeavor had been made to distinguish between myxedema of thyroid and of mixed thyroid and parathyroid origin. Some attributed considerable influence to the parathyroids in determining sexual and mental changes. He had records of 61 cretins now living in the state and all native born. In a majority of them there was absence of palpable thyroid enlargement. Exophthalmic goitre appeared to be much more common in the country about San Francisco Bay than in other parts of the state. His list included 33 well-marked cases of exophthalmic goitre, excluding *formes frustes*. Of these 9 were in males, and 24 in females; 7 occurred in patients with goitres of years, standing. He said there was danger in labeling too many indefinite nervous affections with a convenient diagnosis of a *forme fruste* of exophthalmic goitre, which only a combination with cardinal symptoms would justify. He had seen enlargement of the thyroid with nervous symptoms and tachycardia, the result of masturbation in young men. The senseless administration of thyroid extract in large doses for obesity, arterio-sclerosis, and other cases of supposed thyroid insufficiency, the speaker said, should be discountenanced. The reports of treatment in myxedema and cretinism were very enthusiastic. It was usually not necessary to give large doses of a good thyroid preparation; in cretinism he began with one grain daily, and rarely went beyond the five grains. Opinions were in accord that preparations representing the whole gland could not wholly be replaced by the active principle iodothyrin. It was very difficult to judge of the efficacy of any method of treatment in an affection notoriously so uncertain in course and symptoms as Graves' disease. From the evidence at command, it was not possible to say that the parathyroids were in any way influenced in Basedow's disease. The possible influence of the thyroid in California as an etiological factor in their very common arterio-sclerotic and renal affections should be remembered.

IT is reported that cerebrospinal meningitis has appeared in epidemic form in Lunenburg, N. S., with twenty fatal cases.

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OCULAR DISTURBANCES IN PREGNANCY.

Pregnancy may react on the eye in various ways by the intermediary of nervous reflex or from plethora and increased blood pressure. To these disturbances having their origin in the nervous system or the blood, those arising from toxemia appear at the present time beyond doubt and the toxic origin is due to the condition of the nutrition of the pregnant female and the insufficiency of the urinary elimination. To state to which one of these factors one should attach the appearance of each of the ocular disturbances at once becomes a problem often difficult to solve, and this intimate relationship existing between the eye and pregnancy is yet most obscure in many respects. It is quite true that hysteria may enter into play and a pregnant female, if previously neurotic, may, from the fact of her gestation, offer an exaggerated form of nervous disorder. For example, one patient may become polyopic, while another may present an amaurosis, these subjective phenomena disappearing after labor has taken place.

Under other conditions the nervous system plays no part in the ocular disturbances and beside certain conditions having no importance, such as pigmentation of the eyelids, or a lachrymal hypersecretion, other more serious lesions have been recorded, such as ulcer of the cornea and conjunctival hemorrhage. A weakening of the muscle of accommodation of the pupil is not infrequently met with, but this phenomenon soon disappears after labor and may perhaps be attributed to the insufficiency of the general nutrition during gestation. Power has seen a cataract in one or both eyes appear and at each pregnancy the lesion became worse, although no sugar or albumin could be found in the urine to account for the occurrence of the process.

Anesthesia of the retina is perhaps one of the most frequent disturbances met with, and the hemeralopia that it produces becomes manifest, especially towards the end of pregnancy, being occasionally accompanied by diminution of visual acuity. In certain cases the etiological cause becomes more complex and blindness follows upon icterus arising during pregnancy, although it is impossible to estimate the respective parts played by the jaundice and pregnancy in the lesion produced.

Lesions of the retina are not always limited to subjective phenomena, and Bosse has met with a certain number of pregnant women who presented a hyperemia of the optic papilla with dilatation of the veins, and from this condition of congestion to a mild form of papillitis is only a step. Optic neuritis is not a rare condition of affairs and it is either a retrobulbar neuritis or a true optic neuritis. The former arises at about the fourth or fifth month of gestation and is usually bilateral. The subjective symptoms met with are a central scotoma or a central amblyopia with alternating improvement or aggravation. Many common symptoms bring retrobulbar neuritis into close relationship with optic neuritis, such as its appearance after the fourth month of pregnancy, its bilaterality, relapses in future pregnancies, and an improvement in vision after labor. There is, however, a distinction to be made, namely, that instead of producing a scotoma, the neuritis has a tendency to rapidly undergo an evolution towards amaurosis. Labor takes place, sight returns quite as good as before, or else the patient has a persistent amblyopia or a unilateral blindness. Ophthalmoscopic examination shows atrophy of the optic nerve, and Berger and Loewy attach such importance to this lesion that they have been able to draw some practical conclusions. They point out that the atrophy is a distinct indication for the production of artificial labor, while, on the other hand, the patient should be warned of the danger that she runs in future pregnancies.

All recorded cases have so far occurred during normal pregnancies, and although certain accidents are very serious in themselves, it may also be said that they become aggravated if the pregnancy is a pathological one. Renal symptoms with phenomena of renal insufficiency, or those due to an insufficiency in the elimination of toxins, are factors presenting a very serious prognosis as far as their action on the eyes is

concerned. A woman with eclampsia is exposed to uremic amaurosis, this condition being made evident by the sudden occurrence of defective vision, while the sight may be completely lost in a time varying from a few hours to a day. When blindness appears at once at the beginning of the affection it is always bilateral. The symptoms of uremic intoxication, such as headache, vomiting, syncope and finally attacks of eclampsia are also to be taken into consideration. The pupils have either a normal diameter or appear dilated, and if a normal reaction of the pupil is found it may be assumed that there is no lesion of the optic nerves. This form of amaurosis is characterized by the complete absence of any change in the fundus, and, although a pupillary stasis may occasionally exist, or a slight degree of albuminuric neuritis, these lesions alone are not sufficient to explain the intensity of the blindness.

The prognosis, for that matter, is that of an intoxication without lesions, and when the toxic condition ends the symptoms disappear and vision returns. The duration of this amaurosis varies from twelve to twenty-four hours, but attacks of uremic amaurosis may be repeated several times, which makes the prognosis less favorable, because several recurrences should lead one to fear that sight may not return to the normal. Uremic amaurosis cannot be mistaken for the hysterical type, because, in the latter, there is no albuminuria and the affection appears in a neurotic subject. Uremic amaurosis is purely toxic in nature and is to be distinguished from the retinitis of albuminuria by the absence of any lesion of the fundus.

Primiparæ are more frequently the subjects of retinitis, the affection occurring usually during the second half of pregnancy. A progressive decrease of visual acuity is noted, sight becomes clouded, the visual field is not decreased and nevertheless the patient complains of a cloud before the eyes which becomes progressively darker. The ophthalmoscope reveals a reddish, opaque, optic papilla, which is slightly prominent, this being due to a slight edema of the papilla. The arteries are contracted, the veins are dilated and tortuous, while around the vessels one finds evidences of a perivascular process. The optic papilla and its immediate surroundings show evidences of small hemorrhages, and in some cases the hemorrhages may be so confluent that the papilla takes on an apoplectic aspect. The macula lutea of the retina becomes stellate and of a brilliant white.

The prognosis of albuminuric retinitis of pregnancy is more favorable than in ordinary cases of this affection, and the later this lesion occurs in pregnancy the better the prognosis. On the other hand it is very much less serious should a premature labor shorten the length of gestation. Certain complications should not, however, be overlooked, such as detachment of the retina, hemorrhage in the vitreous humor and changes in the choroid, which are of such serious import that the question of interruption of pregnancy should be seriously considered. On this point, however, opinions vary, and it is well-known that the neuritis may continue its evolution in spite of obstetrical interference, a fact of which we should never lose sight. As to future pregnancies, Berger and Loewy advise against them, because a recurrence of the nephritis may occur during another pregnancy from which another attack of optic neuritis may result and which this time may be complete. In point of fact, neuritis of the optic nerve is really the only dangerous ocular complication in pregnant women, the others presenting much less gravity, while their infrequency also places a restriction on their importance.

CARE OF YELLOW FEVER PATIENTS.

IN the proceedings of the Orleans Parish Medical Society, held last month, Dr. Rudolph Matas addressed the society on the "New duties and responsibilities imposed upon trained nurses, and other persons intrusted with the care of yellow fever patients, in consequence of the newly acquired knowledge of the mode of transmission of this disease by the mosquito." Dr. Matas insisted upon the added responsibility which has of late years devolved upon the trained nurse who is brought in contact with patients suffering from yellow fever. In this disease, as in many others, the nurse should be supplied with the most recent knowledge, and the most conscientious adherence to its dictates is absolutely essential to success. To this end definite instruction should be given regarding the rôle of the mosquito in the production of the disease and the personal responsibility of the nurse in its destruction. The value of certain laboratory demonstrations elucidating the more important facts in the biological history of the mosquito Dr. Matas urged in addition to the didactic teaching relative to the prophylaxis of yellow fever, and insisted upon the desirability of adding such instruction to the regular curriculum for nurses throughout the South. The

usefulness of such instruction would apply not only to yellow fever, but also to malaria and other tropical diseases in which the mosquito plays a part. A synopsis of certain facts connected with the *Stegomyia fasciata* were offered to the society which were regarded as of general educational value in yellow fever regions. Following this, certain directions to trained nurses were given bearing upon the habits and modes of attack of the mosquito. Methods of protecting the patient by screens and by forms of fumigation are briefly described in the printed statement offered to the society. Finally, seventeen facts connected with mosquito destruction are stated in didactic form. The pamphlet containing these directions ends with a list of certain books of reference more particularly directed to the needs of physicians.

We cannot too highly commend both the idea which Dr. Matas has put into form and the straightforward way in which he has accomplished his task. The information which this small booklet of thirteen pages contains should certainly go into every community and hospital where yellow fever is in the least likely to prevail and should be read by physicians in uninfected regions as an admirable statement of the possibilities of prophylactic medicine.

THE JAPANESE ARMY.

Dr. Louis L. Seaman, of New York, who was surgeon of the First Regiment, U. S. Volunteer Engineers, during the Spanish-American War, returned on Aug. 30 from a second visit, of six months, to the seat of war in Manchuria, undertaken mainly for the study of Japanese methods in army hygiene, medicine and surgery. He pronounces the Japanese army now in the field, with its front covering a distance of two hundred miles, to be the finest large body of troops the world has ever seen, in perfect physical condition and completely equipped in every possible detail. He states that in preparing for another anticipated great battle they had 62,000 empty beds in the field and base hospitals, from the firing line to Dalny, in readiness for the wounded. In addition, they had twenty hospital ships waiting in the port of Dalny to carry the wounded to the home hospitals. While it took us three days on the average to load such a ship in Cuba, he has seen two hundred wounded carefully put on board in the space of thirty-five minutes. The Japanese, Dr. Seaman says, have learned the lesson which we do not seem to care to learn. We send medical men with our armies to take care of the sick and wounded, while they expect their physicians and surgeons to prevent the soldiers from getting ill. Up to our war with Spain it was generally accepted that as an inevitable result of war five men at least would, as a rule, die from disease to each man killed in battle or dying from wounds. The actual figures of that war, however, show fourteen men dying from disease to one killed or mortally wounded in battle. In startling contrast to this are the statistics of the Japanese army. In this campaign they have had one man die from disease to two men killed in the regular performance of duty. Using round numbers, those killed in battle and those who died shortly afterwards from wounds aggregate 50,000 up to the present time, while the total number of men who have died from diseases of every kind are only 25,000.

MEDICAL NOTES.

Hospital for Epileptics at Moscow. — It is announced that a hospital for epileptics at Moscow, Russia, is to be built at once with immediate accommodations for one hundred and fifty patients and possibility of its enlargement.

A Chair of Protozoölogy. — It is stated that the University of London has added to its teaching facilities a chair of protozoölogy, the money for its establishment having been raised from various sources, amounting in all to $35,000. This will be used for the salary of a professor, and further money will be provided for assistants and for the general expenses of the laboratory.

A Nothnagel Scholarship.— It is reported that the memory of the late Professor Nothnagel is to be commemorated through the establishment of a scholarship of $5,000. The income will be awarded each year as a prize for the best essay on such medical problems as may be proposed by the Senate of the University of Vienna. Should no essay be satisfactory, the money will be expended to encourage research on diseases of the intestines.

Meeting of Cumberland Valley Physicians. — Physicians of Maryland and Pennsylvania, included in the Cumberland Valley, met Aug. 29, with an attendance of about eighty. Major James E. Pilcher read a notable paper upon the "Medical Lessons of the Far East," and was elected president of the association for the ensuing year.

Yellow Fever. — The general situation regarding yellow fever is improving and all fear of a highly destructive epidemic is passed. Many

cases, however, have appeared in various parts of Mississippi, and a case was also discovered, Sept. 2, at Atlanta, Ga. A peculiarly unfortunate incident of the epidemic in New Orleans is the illness, from the disease, of Dr. W. C. Rucker who contracted it while in the performance of his duty as one of the experts sent out by the Marine Hospital Service. Two others experts have likewise been attacked by the disease.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, Sept. 6, 1905, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 18, scarlatina 10, typhoid fever 36, measles 5, tuberculosis 26, smallpox 0.

The death-rate of the reported deaths for the week ending Sept. 6, 1905, was 17.02.

BOSTON MORTALITY STATISTICS. — The total number of deaths reported to the Board of Health for the week ending Saturday, Sept. 2, 1905, is 212, against 199 the corresponding week of last year, showing an increase of 13 deaths, and making the death-rate for the week 17.60. Of this number 120 were males and 92 were females; 208 were white and 4 colored; 137 were born in the United States, 74 in foreign countries, and 1 unknown; 37 were of American parentage, 153 of foreign parentage, and 22 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 16 cases and 1 death; scarlatina, 9 cases and no deaths; typhoid fever, 38 cases and 5 deaths; measles, 11 cases and 1 death; tuberculosis, 35 cases and 27 deaths; smallpox, no cases and no deaths. The deaths from pneumonia were 10, whooping cough, 2, heart disease 15, bronchitis 5, and marasmus 10. There were 5 deaths from violent causes. The number of children who died under one year was 67; the number under five years, 87. The number of persons who died over sixty years of age was 38. The deaths in public institutions were 68.

No deaths nor cases of cerebrospinal meningitis during the week.

TYPHOID FEVER. — Typhoid fever has appeared in epidemic form in Rockland, Mass. Several days ago 32 cases had been reported of which 20 had been reported in the past seven days. The source of the disease is not altogether clear, but the evidence points to a certain milk supply, and the owner of the milk farm, who is said to have had typhoid fever a year ago, has been ordered not to deliver any more milk in the town. The farm and its appurtenances were in sanitary condition, but after the owner's attack of typhoid fever, proper precautions in the way of fumigation were not taken, and it is possible the disease may have originated from this source of infection. Local boards of health are investigating the situation thoroughly.

Typhoid fever has also appeared in Springfield, Mass., and there has already been a large number of cases, 13 of which are in one neighborhood. It is believed that either a spring or well in common use is the source of the infection in this instance.

NEW YORK.

BEQUESTS. — By the will of the late Mrs. Annie Stewart Miller, a portion of her estate amounting to about $100,000 is left to the New York Institute for the Blind, and the proceeds of the sale of her household goods, valued at $10,000, to St. Mary's Free Hospital for Children.

PROLONGED COMA. — A case of coma of extraordinarily long duration, resulting from cerebrospinal meningitis, is reported from Yonkers. The patient, a boy eight years of age, sank into unconsciousness on April 8, and remained completely and uninterruptedly comatose until his death on Aug. 31, a period of one hundred and forty-five days.

TYPHOID FEVER. — Between July 29 and Aug. 30 there were reported in the city 1,128 cases of typhoid fever, of which 579 were in the Borough of Brooklyn. More cases of the disease continue to occur in Brooklyn than in any of the other boroughs, but it is stated that comparatively few new ones are now appearing in the Bath Beach section of the borough, where they were especially numerous three or four weeks ago.

BIRTH OF A FILIPINO AT CONEY ISLAND. — The first Filipino birth at Coney Island occurred in the resort known as Dreamland on Aug. 30, the mother being one of a party of Igorrotes who were at the St. Louis exposition. Both mother and child are reported to be doing well in the Dreamland Emergency Hospital. The infant weighed only three and one-half pounds at birth, but the mother refused to have it placed in an incubator.

SALARIES OF POLICE SURGEONS. — By an act of the Legislature passed on May 26 last, the salaries of the New York police surgeons were increased from $3,000 to $3,500 a year. Although the new law went into effect at once, the Police Department had no funds to meet the increase, since it was not included in the regular appro-

priation for 1905. Consequently, the twenty-three surgeons have had to do without their additional pay up to the present time, and Acting Police Commissioner McAvoy has now asked the Board of Aldermen to authorize a special issue of revenue bonds to provide the necessary money.

Transfer of Insane Patients. — The State Commission in Lunacy recently chartered a special train on the New York Central & Hudson River Railroad in order to transfer, under the care of physicians and attendants, six hundred insane patients from the Long Island State Hospital at King's Park, Brooklyn, to the hospitals at Rochester and Willard. This change was rendered necessary on account of the overcrowded condition of the King's Park institution, while at the Rochester hospital the state has just completed additional buildings capable of accommodating 750 patients.

A Case of Yellow Fever. — Henry Wardell, an American, who had been employed by the Panama Railway Company, died from yellow fever in the Quarantine Hospital on Swinburne Island on Sept. 2. He arrived on the steamship "Havana" from Colon on Aug. 31, and was one of six passengers who were sent to Hoffman Island for observation on account of elevated temperature. In a few hours the symptoms of yellow fever developed, and he was transferred to Swinburne Island. It is stated that this is only the fourth case of yellow fever discovered out of more than two hundred suspects who have been taken from ships in New York Harbor this year. It is the first time in five years, however, that New York has had more than one case of the disease in a summer. The last previous fatal case was that of William Smith, a pantryman of the Panama liner "Advance," who died in the Swinburne Island Hospital on Aug. 6.

Smallpox on a Steamship. — When the Portuguese steamer "Peninsular," bound from Lisbon and the Azores for New Bedford, Mass., with 34 cabin and 553 steerage passengers, recently arrived at her destination, she was not allowed to land there, as it was found that a woman in the steerage was suffering from smallpox. The New Bedford health authorities, having no facilities for handling such a large number of persons, ordered the vessel to proceed to New York after they had communicated with Dr. Doty, health officer of the port, in regard to the matter. When the "Peninsular" arrived there on Aug. 31, she was detained in quarantine for fumigation, and the patient sent to the hospital for contagious diseases on Kingston Avenue, Brooklyn. All the other passengers and the members of the crew were vaccinated, and those on board who had been especially exposed to the danger of infection were sent to Hoffman Island for observation.

Miscellany.

THE PHYSIOLOGY OF HICCOUGH.

The physiology of hiccough is interesting and should be remembered because the presence or absence of this symptom sometimes forms a valuable indication in the treatment of dyspeptic subjects. The mechanism which produces hiccough or *singultus* is the same as that producing the "cry" which often accompanies an epileptic fit, the so-called "bark" of sufferers from hydrophobia and tetanus, and the occasionally recorded noises proceeding from "the silent dead" when rigor mortis is setting in. The mechanism is akin likewise to that of sighing and yawning, which modifications of respiration, however, are under the control of the will. The noise emitted is due to a rapid clonic spasm of the diaphragm, causing a premature inspiratory act, while the walls of the glottis are not sufficiently abducted to allow the air to enter the trachea quietly. If the diaphragm contracts very energetically the result is retching and vomiting. The inability to maintain voluntarily the regular respiratory rhythm is a well-known condition precedent to actual seasickness and in fact the etiology of hiccough is sufficient to explain the physiological action of emetics, physical or pharmacological. The proximate cause of hiccough is the sudden contraction of the diaphragm by direction of the phrenic nerves. These lengthy nerves may be stimulated directly, centrally, during their cervical or thoracic course or at their terminal filaments; they may be the final carriers of reflex messages, particularly from the ubiquitous vagus nerve; occasionally hiccough occurs as a functional neurosis, although some organic cause, patent or latent, as a general rule can be found. The most commonly occurring stimuli proceed from below the diaphragm, either from some local irritation of the peritoneum, as in perityphlitis, or from an irritated stomach or intestine; thus the too liberal use of alcohol or of red pepper in "devilled" foods, or the existence of flatus, may all stimulate the afferent fibres of the vagus and perhaps consummate in emesis. Local irritation of the pharynx of the mechanical pressure of an aneurysm or a neoplasm upon the afferent phrenic nerves may lead to distressingly chronic attacks of hiccough. With paresis of the phrenic nerves this manifestation is absent. Of the many therapeutic agencies recommended sneezing is one of the most efficient; it is also one of the most ancient, for Plato tells us that it succeeded with Aristophanes when all other means failed to arrest an attack of hiccough. — *Lancet.*

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, AUG. 26, 1905.

CITIES.	Population.*	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases	Diphtheria and croup.	Typhoid Fever.	Cerebro-spinal menin-gitis.
New York . .	5,208,644	1,395	615	40.34	9.01	1.07	1.43	1.07
Chicago . . .	1,990,750	561	230	37.80	5.94	.18	—	—
Philadelphia	1,407,968	438	160	31.93	5.70	1.37	2.28	—
St. Louis . .	633,606	—	—	—	—	—	—	—
Baltimore . .	542,229	195	66	40.16	4.62	—	5.14	—
Cleveland . .	444,251	—	—	—	—	—	—	—
Buffalo . .	400,645	—	—	—	—	—	—	—
Pittsburg . .	362,403	127	53	34.64	9.45	.78	4.72	—
Cincinnati . .	338,377	—	—	—	—	—	—	—
Milwaukee . .	325,990	—	—	—	—	—	—	—
Washington .	300,776	—	—	—	—	—	—	—
Providence .	196,744	75	20	40.00	—	2.67	2.67	1.33
Boston . . .	593,598	237	100	35.44	5.48	.42	1.26	1.26
Worcester . .	127,963	57	22	36.84	1.75	1.75	3.51	—
Fall River . .	105,697	44	26	47.73	4.55	2.27	—	—
Cambridge . .	97,426	34	15	29.41	—	—	—	—
Lowell . . .	94,945	42	23	30.95	4.76	2.38	—	—
Lynn	77,625	29	11	31.03	6.90	—	—	—
New Bedford	74,221	31	14	38.71	3.23	3.23	—	—
Springfield .	73,484	24	8	29.17	—	—	8.33	—
Lawrence . .	69,939	28	16	42.86	3.57	—	3.57	—
Somerville .	68,136	23	11	40.00	—	—	—	—
Holyoke . .	49,124	19	9	36.84	—	—	—	—
Brockton . .	47,782	13	7	15.38	—	—	7.69	7.69
Malden . . .	37,980	6	2	16.67	—	—	—	—
Haverhill . .	37,818	17	6	5.88	—	—	5.88	—
Salem	37,586	24	17	29.17	—	4.17	4.17	—
Chelsea . . .	37,177	13	7	8.33	—	—	—	—
Newton . . .	36,694	12	5	41.67	—	—	—	—
Fitchburg . .	33,017	14	6	57.14	—	—	—	—
Taunton . . .	30,952	—	—	—	—	—	—	—
Everett . . .	29,108	10	4	20.00	—	—	—	10.00
Quincy . . .	28,087	15	7	40.00	6.67	—	—	—
Waltham . .	26,339	5	2	40.00	—	—	—	—
Gloucester .	26,006	—	—	—	—	—	—	—
Pittsfield . .	25,000	10	2	20.00	—	—	—	—
Brookline . .	23,424	—	—	—	—	—	—	—
North Adams	22,195	3	1	33.33	33.33	—	—	33.33
Chicopee . .	20,187	5	4	80.00	20.00	—	—	—
Northampton	19,942	9	4	44.44	—	—	11.11	—
Medford . .	19,638	7	3	14.29	—	—	—	—
Beverly . . .	15,232	6	2	—	—	—	—	—
Newburyport	14,673	5	1	40.00	—	—	—	20.00
Hyde Park .	14,402	5	2	40.00	—	—	—	—
Woburn . . .	14,401	2	—	50.00	—	—	—	—
Melrose . . .	14,394	4	1	—	—	—	—	—
Leominster .	14,390	—	—	—	—	—	—	—
Marlboro . .	14,072	3	2	33.33	—	—	—	—
Westfield . .	13,609	5	3	20.00	—	—	—	—
Clinton . . .	13,105	7	3	28.57	14.29	—	—	14.29
Peabody . .	13,097	—	—	—	—	—	—	—
Attleboro . .	12,702	—	—	—	—	—	—	—
Revere . . .	12,647	5	3	40.00	—	—	—	20.00
Adams . . .	12,432	—	—	—	—	—	—	—
Milford . . .	12,105	—	—	—	—	—	—	—
Gardner . . .	11,981	7	5	—	14.29	—	—	—
Weymouth . .	11,585	5	—	20.00	—	—	—	—
Framingham .	11,549	—	—	—	—	—	—	—
Watertown . .	11,262	1	1	—	—	—	—	—
Plymouth . .	11,118	—	—	—	—	—	—	—
Southbridge .	10,947	9	4	44.44	—	11.11	—	—
Wakefield . .	—	—	—	—	—	—	—	—

* NOTE. — The population given for cities outside of Massachusetts is estimated. Those of Massachusetts are from the Census of 1905.

Deaths reported, 3,587; under five years of age, 1,511; principal infectious diseases (smallpox, measles, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 1,335; acute lung diseases 233, consumption 371, scarlet fever 8, whooping cough 31, cerebrospinal meningitis 25, smallpox 0, erysipelas 7, puerperal fever 10, measles 10, typhoid fever 61, diarrheal diseases 779, diphtheria and croup 32.

From whooping cough, New York 15, Chicago 4, Philadelphia 5, Baltimore 1, Pittsburg 3, Pittsfield 2, Revere 1.

From scarlet fever, New York 2, Chicago 1, Pittsburg 4, Lawrence 1. From cerebrospinal meningitis, New York 15, Providence 1, Boston 3, Brockton, Everett, North Adams, Newburyport, Clinton and Revere 1 each. From erysipelas, New York 3, Baltimore 2, Boston 2. From typhoid fever, New York 20, Philadelphia 10, Baltimore 10, Pittsburg 6, Providence 2, Boston 3, Worcester 2, Springfield 2, Lawrence, Brockton, Haverhill, Salem, Northampton and Hyde Park, 1 each.

In the seventy-six great towns of England and Wales, with an estimated population of 15,809,877, for the week ending Aug. 19, 1905, the death-rate was 17.4. Deaths reported 5,195; acute diseases of the respiratory organs (London) 48, whooping cough 58, diphtheria 34, measles 79, smallpox 0, scarlet fever 41.

The death-rate ranged from 6.2 in Hornsey to 27.3 in St. Helen's; London 17.0, West Ham 21.7, Brighton 10.7, Southampton 20.4, Plymouth 22.5, Bristol 14.3, Birmingham 17.5, Leicester 16.0, Nottingham 16.4, Birkenhead 18.0, Liverpool 21.9, Wigan 25.9, Bolton 18.7, Manchester 23.9, Salford 23.0, Halifax 13.0, Bradford 12.7, Leeds 16.1, Hull 23.8, Sheffield 19.5, Newcastle-on-Tyne 15.8, Cardiff 11.9, Rhondda 20.4, Merthyr Tydfil 17.7.

METEOROLOGICAL RECORD.

For the week ending Aug. 26, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

DATE	Barometer.	Thermometer.			Relative humidity.			Direction of wind.		Velocity of wind.		Weather*		Rainfall in inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A.M.	8.00 P.M.	Daily mean.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	
S. . 20	30.00	69	73	62	83	80	82	N W	S	4	5	C.	O.	T.
M. . 21	30.08	68	75	62	87	77	82	N W	S	5	6	C.	C.	.5
T. . 22	29.94	78	90	68	78	74	76	S W	S W	8	13	F.	O.	.12
W. . 23	30.00	78	83	68	69	51	60	W	N W	9	4	C.	C.	.5
T. . 24	29.98	78	89	67	60	67	64	S W	W	10	8	F.	F.	T.
F. . 25	30.08	68	75	62	89	82	86	E	S E	10	6	R.	O.	.29
S. . 26	30.02	64	69	58	76	64	70	N E	N E	9	6	O.	C.	.5
Sum	30.01		79	62			78							.39

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. Sum Means for the week.

SOCIETY NOTICES.

NEW YORK AND NEW ENGLAND ASSOCIATION OF RAILWAY SURGEONS. — The fifteenth annual meeting of this association will be held at the Academy of Medicine, New York City, Nov. 17, 18, 1905, under the presidency of Dr. G. F. Conn, of Concord, N. H. One-half day of the meeting will be devoted to a symposium on "Injuries to the Head and Spine." A cordial invitation is extended to the profession.

GEO. CHAFFEE,
Secretary.

THE AMERICAN ROENTGEN RAY SOCIETY. — The sixth annual meeting of the American Roentgen Ray Society will be held at the Johns Hopkins Hospital, Baltimore, Sept. 28, 29 and 30. The Stafford Hotel has been selected as headquarters. The program includes foreign as well as American workers in this special department of medicine. All regular practitioners are eligible to membership and are invited to attend the scientific sessions and view the exhibition of apparatus. Further information may be obtained from Dr. Russell H. Boggs, Secretary, Empire Building, Pittsburgh, Pa.

RECENT DEATHS.

EDWARD WADSWORTH SHEAD, M.D., M.M.S.S., formerly of Cambridge, died in Seattle, Wash., Aug. 20, 1905, aged thirty-two years.

JOHN GRAY PARK, M.D., M.M.S.S., of Groton, died in Worcester, Aug. 29, 1905, aged sixty-seven years.

NOMUS PAIGE, M.D. M.M.S.S., died in Taunton, Sept. 3, 1905, aged sixty-three years.

BOOKS AND PAMPHLETS RECEIVED.

A Text-Book of Physiology. Normal and Pathological. For Students and Practitioners of Medicine. By Winfield S. Hall, Ph.D. (Leipzig), M.D. (Leipzig). Second edition, revised and enlarged. Illustrated. Philadelphia and New York: Lea Brothers & Co. 1905.

The Streptococcus in Gynecological Surgery. By Hunter Robb, M.D. and Winford H. Smith, A.B., M.D. Reprint.

Historical Sketch of the Radical Mastoid Operation. By Ray Connor, A.B., M.D. Reprint.

Annali di Medicina Navale. Indice Decennale Sistematico per Materie. 1895–1904. Compilato per Cura Della Direzione. Roma. 1905.

Physical Diagnosis. By Richard C. Cabot, M.D. Third edition, revised and enlarged. Illustrated. New York: William Wood & Co. 1905.

Original Articles.

THE MODERN CONCEPTION OF TUBERCULOSIS OF THE SKIN.*

BY CHARLES J. WHITE, M.D., BOSTON,
Instructor in Dermatology in Harvard University

It is certainly a great privilege for me to come to Baltimore and address this society and to be allowed to assist at one of the closing incidents in your president's distinguished career among us in this country, but the importance of this fact added one more reason to my hesitancy in accepting the rather trying ordeal of reading before this audience a paper upon a subject of such vast extent and of such great importance as cutaneous tuberculosis.

When Koch discovered the bacillus of tuberculosis in 1882 it was thought that the subject of cutaneous tuberculosis was once and for all settled, and that the presence or absence of these bacilli would sharply demarcate the tuberculous and nontuberculous diseases of the skin. But the dermatological world in its ever restless but fortunate vigilance has not been satisfied with this rather restricted point of view and has felt obliged, for clinical and perhaps pathological reasons, to enlarge the range of cutaneous tuberculosis by adding to the scientifically proved and accepted bacillary group another class of cases which, to a greater or less extent, rest upon a tuberculous foundation. I refer to the somewhat obscure group of affections known as tuberculides, paratuberculoses or toxituberculides. It is principally to the modern French School, represented chiefly by Besnier, Barthélemy, Leredde, Hallopeau, Darier and Thibierge, that we are indebted for our best knowledge of these somewhat uncommon conditions which probably owe their origin to the toxins of an associated tuberculosis or to the even more subtle influences of a tuberculous susceptibility.

In our treatment, then, of this important theme we have to consider two distinct divisions of cutaneous tuberculosis:

1st, the true tuberculosis where the bacilli of Koch can always be found in greater or less abundance and where animal experimentation always proves successful.

2d, the tuberculides, where bacilli are absent, but where animal inoculations may often give positive results, where the pathological picture is usually highly suggestive of tuberculosis and where evidences of the disease, tuberculosis in some organ or tissue elsewhere in the body, can frequently be detected; and,

3d, a subdivision of the above second group where we find a constitution prone to tuberculosis, one which exhibits the so-called tubercular diathesis of our forebears.

Class I contains the well-known affections: lupus vulgaris; scrofulodermia, including tuberculous gummata tuberculous ulcers, tuberculous lymphangitis; cutaneous miliary tuberculosis; tuberculosis verrucosa cutis; and lastly verruca necrogenica.

Class II comprises the less known diseases: lichen scrofulosorum, erythema induratum, folliclis acnitis, acne scrofulosorum, acne cacheticorum, and morbilliform or scarlatiniform eruptions in the course of acute pulmonary tuberculosis.

Class III includes, possibly, eczemascrofulosorum, pityrias rubra of Hebra, certain dyschromias, lupus erythematosus, angiokeratoma and lupus pernio.

CLASS I.
Lupus Vulgaris.

The word lupus is a very old one in medicine and was used by the ancients to denote a disease characterized by gnawing or devouring tendencies and thus the term served to embrace many ulcerative affections up to the nineteenth century, when Willan restricted its use to cutaneous conditions associated with the presence of nodules or tubercles. Biett and his pupils Cazenave and Schedel narrowed the word still more to tubercles which ulcerated superficially and included the disease lupus erythematosus — a connection which has been and still is a bone of contention among dermatological writers. Devergie and Lugol advanced our knowledge by linking the disease with scrofula, and, some years later, Virchow recognized the relationship between lupus and white swelling. Finally, Friedländer recorded the histological identity of lupus and tubercular nodules in the lungs and thus practically all that was lacking in the chain of evidence which should connect positively lupus vulgaris with tuberculosis was the scientific link which Koch supplied in 1882 in the discovery of the tubercle bacillus. This most important event was followed in 1883 by the demonstration of the same organism in the skin in cases of lupus by several investigators, including Cornil, Leloir, Pfeiffer, Doutrelepont, Demme, Schuchard and Krause, and in the same year Koch also found the bacillus and produced tuberculosis in guinea pigs by the inoculation of lupous material into their bodies.

The earliest and most characteristic symptom of lupus vulgaris is the classic nodule which appears as a deeply-seated papule about the size of a small French pea. It is usually round, rises but little above the surface, is brown-red in color, and distinctly soft in consistency. In many cases the nodule may be obscured by the amount of vascularity present, but can always be demonstrated in its true colors by pressing firmly upon it with a piece of glass when the symbolic nodule is revealed. This procedure is called diascopy and is of great value to the clinician.

The natural tendency of this primary lesion is to soften without ulceration and to leave in its wake a scar. The process is then continued by the peripheral formation of other nodules, which pass through the same phases and in this manner the disease continues its inevitable but slow eccentric course (*lupus nodularis, lupus circumscriptus*).

*Read before the Laennec Society of Baltimore at its May meeting.

Thus a pure, uncomplicated area of lupus will consist of a central red, boggy, uniform tissue, covered, perhaps, with delicate whitish-yellow scales, and surrounded by the characteristic outlying, soft, brown-red nodules. But the process is not always so simple and the numerous secondary changes about to be described depend upon the seat of the disease, the age of the patient and upon that vague quantity — idiosyncrasy.

Such a typical patch of lupus non-exedens is usually single and found upon the cheek, but may more rarely occur upon the nose or the forehead or the arms, or perhaps elsewhere, but as a rule, these regions of the body produce other types of the disease.

When lupus develops upon the nose or on the ears it is very apt to be accompanied by a more or less marked papillary hypertrophy (*lupus hypertrophicus*), by an abundant localized edema which obscures the papillary overgrowth (*lupus elevatus, lupus tumidus*), and by a pronounced hyperemia (*lupus turgescens*), and by these three factors are produced the soft, red, crackled and scaling noses, sometimes reaching the size of a pullet's egg, which are so deceptive to the unskilled prognostician, for the disease extends very deep and when a final cure has been accomplished the victim is left with but a mere suggestion of what was once his nose.

If, again, the disease breaks out upon the wrists or the back of the hands or the dorsum of the feet (the latter a rare occurrence), it is very prone to assume a vegetative type (*lupus papillomatosus*) composed of elongated, flat-topped papillæ, but here a uniform atrophic skin does not cover over the papillary mass, and we see a warty area, whitish, yellowish, red, surrounded by a soft, dull-red, uniform zone and covered in places with yellow or bloody crusts, for staphylococci, according to Riehl and Paltauf, or morococci, as Unna claims, are at work in the deep hollows between the papillæ, and pus is being formed which of itself slowly reaches the surface and forms crusts, or can be quickly demonstrated by firm pressure on our part.

And again, if we are dealing with lupus upon the legs or the thighs or the arms or the buttocks, or more rarely the trunk, we shall find still another type of the disease. In these places the bacilli seem to find a more congenial soil and the nodules form more rapidly and the process extends ever peripherally, leaving scar tissue in its wake and forming gyrate borders composed of large, flat, red nodules covered with thick yellow crusts (*lupus serpiginosus*). This type is apt to appear in adults and the older the patient, the more marked is the tendency for the scar to produce abundant, dense, fibrous tissue (*lupus scleroticus*). It is in this serpiginous type that we are apt to encounter frequent attacks of local, deep-seated erysipelas and in such cases it is not very uncommon to see a marked elephantiasis develop.

Thus far we have spoken only of the relatively benign, slow-growing types of lupus vulgaris, but unfortunately there are other phases which sometimes develop with astonishing rapidity and malignity. These secondary processes are usually limited to the face and especially to the nose, but may occur elsewhere, as on the finger.

For some unknown reason pus cocci may develop and flourish and then ulceration ensues (*lupus exedens*). This process may be of trivial nature, but on the other hand it may lead to total destruction of the nose, of the lips, of the ears, of the eyes, or even of a large part of the face (*lupus vorax, lupus phagedenicus, lupus mutilans*), and if a cure can be effected, we are left with a mere slit where once was the nose or the eyes, the mouth or the ear. And finally, in the hypertrophic types, especially of long duration, or in old or new scars, the epithelium may assume an aggressive rôle and then the dread complication of epithelioma may develop and we have to deal with the most malignant sequela of skin tuberculosis.

Lupus vulgaris is considered by some authors to be the most frequent type of cutaneous tuberculosis. It is distressingly common on the continent of Europe, less frequent in England and still more unusual in native Americans. The disease rarely develops before the age of three years and seldom begins after the age of thirty, but Hebra's rather categorical statement that thirty is the outside limit can no longer be considered proper. Perhaps the common age for its first appearance is between six and ten. The disease shows a strong affinity for the female sex, Crocker going so far as to claim the proportion of four to one, but probably two to one is a more conservative estimate.

The disease shows a strong predilection for the poor and ill-nourished and in Europe it is not unusual to find pulmonary tuberculosis present secondarily, but seldom primarily, while other forms of tuberculosis are frequently encountered. Thus Colcott Fox found 33% of patients with glandular enlargements, 15% with scrofuloderma, and 8% with joint or bone disease.

The mode of entrance of the tubercle bacillus is somewhat obscure. Leloir enumerates five possible sources of origin: (1) from external inoculation; (2) from within by direct continuity; (3) by way of the lymphatics or veins; (4) through the arterial system; and (5) through uterine channels. Clinicians have observed that when the contagion arises from without the disease is apt to be verrucous or ulcerative; when from within the nodular variety usually forms and is, as we have already noted, the most benign in its course and in its results.

Among the predisposing causes may be mentioned oozing eczemas, burns, traumata, herpes zoster, and certain customs such as kissing, tattooing, vaccination, piercing the ears, and circumcision as practised by the Jews. Contagion from within frequently follows measles or other febrile disturbances when the bacilli from some internal, broken-down focus are swept toward the surface.

As to the favorite seat of the disease, the face stands preëminent, Leloir recording 276 instances in 312 patients, — over 88%; while Lenglet claims 66% for the face, 25% for the extremities, and

8% for the neck. Lupus of the genitalia is very rare and is usually ulcerative. Primary lupus of the scalp is practically unknown, except for the two cases of Neisser and Wolters.

Before leaving these etiological data I must digress a moment from the subject of cutaneous tuberculosis and emphasize the more modern ideas of the prevalence of lupus in the mucous membranes. Audry is bold enough to claim that practically all cases of nasal cutaneous lupus develop from the mucous surface, while Bender found in 380 cases that the mucous membranes of the body were involved in 45%, and under these circumstances the disease tends to ulcerate and is always difficult to check and consequently of grave prognosis.

Pathologically lupus first develops as a group of plasma cells about a vessel wall, usually in the upper part of the corium. Proliferation of these cells is quickly followed by their disintegration, at first cytoplasmic, then nuclear, and the endo-, meso- and peri-thelial changes in the central vessel result in the cutting off of the blood supply and the production of the focal caseation surrounded by the typical walls of giant, epithelioid and embryonic cells. The tendency evinced by Nature to surround this whole mass with an outwork of fibrous tissue and even to penetrate its interstices, and its success or failure to accomplish this protective action determines the benignancy or malignancy of the clinical picture. In certain cases this fibrous tissue may undergo myxomatous or colloid degeneration.

In this process of tuberculization sebaceous glands, hair follicles, vessels, nerves, collagen and elastin all disappear in the disintegrating process, the sweat glands, apparently exhibiting a peculiar resistance, but in the end succumbing.

While these deeper metamorphoses are taking place the epidermis is also responding to the toxins of the disease and atrophies or hypertrophies according to the nature of the underlying process. In nodular, circumscribed lupus, the upper layers of the skin shrink, while in the diffuse, unencapsulated varieties, the rete proliferates.

Tubercle bacilli, the originators of all these grave changes, are strangely few in number in the tissues, and to find them one must look very diligently in the young, newly-formed groups of plasma cells. So difficult it is to demonstrate these bacilli that it is always easier to prove one's case by animal inoculation.

Such, in brief, are the main points in the pathology of lupus, and the disease increases by the spreading of these primary plasma cell foci along the blood or lymph channels followed by the subsequent changes which these cells, stimulated by the tubercular toxins, produce.

Before closing our consideration of lupus vulgaris I wish to point out another peculiarity of the tubercle bacilli present. I refer to their power of producing a sero-fibrinous inflammation, which causes considerable edema followed by reticular degeneration or even total necrosis, and ending in the formation of thick, loose crusts. This process may develop spontaneously from the effect of chills, menstruation, prolonged debauches, attacks of indigestion or surgical operations, or, on the other hand, we may produce it by the injection of tuberculin.

Scrofuloderma.

This word includes several conditions of tuberculosis of the skin which we shall now consider. Next to lupus vulgaris it is the type most frequently encountered and bacteriologically the one most easily demonstrated, but on account of the great clinical differences it presents it seems most proper to regard the term simply as a family name, and to consider each of its members separately.

Tuberculous gummata. — These tuberculous nodes may be dermic or hypodermic. The former arise as small nodules in connection with tubercular lymphangitis and appear as deep kernels covered with a dull, red skin. They enlarge slowly and soften, and the overlying integument becomes more and more stretched and more livid in color and finally breaks, emitting a thin, sanious fluid containing the bacilli of Koch. In the meanwhile other similar foci have arisen and have undergone the same changes, and in introducing a flexible probe into the first small opening, it will be seen that the neighboring skin is undermined in many directions. The whole structure may now heal by granulation, but this is exceptional. As a rule, we find that sooner or later an irregular tuberculous ulcer develops and in the end heals, leaving ugly, tortuous, radiating, rather keloidal and uneven scars.

These gummata may arise anywhere over tuberculous glands, joints, bones or viscera, but we are most apt to meet them over the parotid gland above or below the inferior maxilla, or in the clavicular region.

The deep or hypodermic variety may also arise in any part of the body where the panniculus adiposus is present and produce what we know by the name of "cold abscess." The original nodes vary in number from three to ten, are very indolent, usually painless, but finally soften, reach the surface and produce ulcerations similar to those of the more superficial type.

Both of these varieties are of serious prognosis for they generally signify underlying grave conditions.

Tuberculous ulcers. — Coyne in 1871 was the first to describe this condition and was followed in 1879 by Jarisch and Chiari, and still later by Cornil and Babes, Hillairet, Julliard, Kraske, Michaud and others, who have left us classical descriptions placing the disease on a firm scientific foundation. Despite these numerous observations, the disease is rare. It usually develops about an orifice and, as a rule, denotes advanced internal tuberculous disease. Vallas ascribes 33% of the cases to the anal region, due to inoculation from fecal matter loaded with the bacilli from tuberculous intestines; 30% to the lips, where the disease arises from tuberculous sputum from the lungs or to infected saliva, and the re-

maining percentages to other parts of the body, notably the vulva, which has become diseased from tuberculous discharges from the uterus or adnexa and to the penis from tuberculous urine. Very rarely, on the other hand, tuberculous ulcers may be found on otherwise healthy individuals, as in the classical cases where the disease has been inoculated in the Jewish ritual or circumcision, or again where a child has cut himself on a spittoon used by a phthisical parent.

The disease usually arises as a yellow-red, miliary papule, which soon caseates, producing a rather hollow ulcer with soft, sinuous, indented, undermined border and an uneven floor, dotted with yellow papillary projections, bathed with a thin pus. Around this opening one is apt to see satellite, yellow papules which undergo the same changes and in this way an irregular ulceration is developed. Bacilli are present in comparatively large numbers and are to be found most abundantly in the papillary outgrowths from the bottom of the ulcer.

Pain may or may not be present, but is often of excruciating character about the mouth when the patient takes his food or about the anus when he empties his bowels. Healing never occurs spontaneously, and the prognosis is always grave in the primary as well as in the secondary varieties.

Tuberculous lymphangitis. — Bazin in 1870 first described this affection, but it was not until 1885 that Merklen clearly demonstrated its tuberculous nature.

The condition is a rare one. The disease usually arises on the upper extremities, due to some abrasion of the skin and subsequent inoculation. Often the initial lesion is a tuberculous paronychia or an anatomical tubercle, and the same causes and occupations which produce these better known conditions give rise to tuberculous lymphangitis.

Laffitte describes four types, — the moniliform, the isolated, the angiectasic and the reticular. The moniliform variety is the one most frequently encountered and consists of a beaded or nodular condition of lymphatics, extending sometimes from the finger to the axilla, or from the toe to the groin. Round, small, hard nodes appear deep in the skin and, as time goes on, swell, elevate the skin, soften and eventuate in gummata or in ulcers, producing the phenomena described above in connection with these tubercular processes. In this way all stages of tuberculous degeneration, from the initial, minute, subcutaneous nodule up to the large, irregular ulcer, may be seen along the course of the lymphatics of an extremity, and in the arm double lines along the radial and ulnar streams uniting at the elbow have been observed.

In the second or isolated type the disease seems more benign and we have single or at most two or three foci invaded.

The third or lymphangiectasic form is very rare and has been described by Hallopeau and Goupil. The disease apparently develops at the extremity of a long bone, forming an ampulla. Then moniliform swellings form higher up the extremity and grow into large masses which reach the surface and break, giving up abundant quantities of pus mixed with lymph, and lymph vesicles may surround these ampulliform masses.

The last variety is also uncommon, but cases have been observed by Riehl and by Hallopeau. Here the developing nodes do not follow the usual course of the lymphatics, but tend to spread in unusual directions, often producing serpiginous masses.

All of these classes of tubercular lymphangitis, with the possible exception of the moniliform, are of bad omen, death usually resulting rather quickly by generalized tuberculosis.

Miliary Tuberculosis.

This variety of cutaneous tuberculosis is not common and is quite analogous to the similarly styled condition in the internal organs, as above alluded to. The minute nodules form the initial stages of tuberculous ulcerations and consequently appear for the most part about the orifices of the body. Their development and course is apt to be a rapid one, and their prognosis grave on account of the internal conditions to which they owe their being. Pathologically they are tuberculous granulomata.

Tuberculosis Verrucosa Cutis.

This clinical variety of cutaneous tuberculosis owes its origin in the vast majority of cases, to external infection, and for this reason we are wont to find it in people whose occupation exposes them to contact with tuberculous matter such as pathologists, dissectors, cattlemen, hostlers, butchers, or again the disease may arise from autoinoculation in tuberculous individuals.

For these reasons we are apt to meet with the affection on exposed surfaces, such as the back of the hands and less often on the dorsum of the feet, or again on the buttocks where scratching with infected nails undoubtedly introduces the bacilli. It is a custom when one has bruised one's skin to moisten the part with the mouth, and this habit surely accounts for many instances of verrucous tuberculosis in phthisical individuals, and I think may explain the prevalence in the mine workers whose cases were reported a few years ago in Germany. One more characteristic of this verrucous type is its proclivity to attack adults, but the important rôle of occupation will, I think, sufficiently explain this frequency.

It is to Riehl and Paltauf that we owe our first scientific information of this class of cases, and their classical monograph of 1886 is still our fount of knowledge. The disease begins as a firm nodule which soon flattens down in the center and acquires the typical villous, warty look which characterizes it. These papillomatous growths are apt to assume a dirty-white hue often tinged with yellow or with red from the sero-pus or the blood which gradually reaches the surface from between the papillæ. This typical color and the flat-topped papillæ, surrounded by a soft, dull-red periphery of greater or lesser width, complete the clinical picture, and although it is sometimes difficult to draw the line between this affection

and certain papillomatous varieties of lupus on the extremities or the buttocks, the complete absence of peripheral nodules gives the clinician a positive guide toward the differentiation of the two processes.

Pathologically, tuberculosis verrucosa consists of acanthosis, hypertrophy of the papillæ and foci of inflammation and miliary abscesses in the upper layers of the corium. Proper staining reveals the presence of pus cocci and tubercle bacilli midway in abundance between lupus vulgaris and tuberculous ulcers.

Verruca Necrogenica. — Anatomical Tubercle.

This condition with its double name is very simple, etiologically and clinically, for it arises almost universally over one or more knuckles of an adult whose vocation necessitates the handling of tuberculous matter. For this reason anatomists and pathologists, veterinarians, and those who have to do with animals living or dead, are the usual victims. The lesion has an incubation stage of eight to ten days and soon appears as a firm, red papule, which soon sinks in the center and ultimately simulates a corn lying freely movable over the joint and presenting a hard, flat, yellow-white, hyperkeratotic surface, surrounded by a fine halo of inflammatory tissue. On puncture a minute drop of pus may be squeezed out.

CLASS II.
The Tuberculides.

As has been hinted at in the beginning of this paper, we are now dealing with an obscure class of dermatoses about which we are still lamentably ignorant. I have spoken etiologically of the most prevalent belief that we are concerned with reactions of the skin due to the irritation of toxins brought with the blood current from distant tuberculous foci in the individual's body, which may be glandular, visceral, serous, osseous, articular or cutaneous. But there are other theories which we must allude to in passing. Tuberculides may arise from bacilli growing in a soil altered by the previous tuberculous state of the host. Or, again, these lesions may arise from emboli of dead or extremely attenuated bacilli which have been swept away in the blood stream of a tuberculous patient and find lodgement in one or a hundred points in the individual's skin. All three of these theories have their adherents who strengthen their faith on analogous processes in other, better known diseases.

Lichen Scrofulosorum.

Of all the tuberculides this disease seems to approach nearest to true tuberculosis. It is practically always associated with some easily demonstrable, symbiotic tuberculosis whether of glands, bones, joints, or skin, seldom with tuberculosis of the lungs. The true nature of the condition was first recognized by Hebra in 1872. Vidal drew our attention to its pilo-sebaceous origin in 1889, and two years later Jacobi, Sack, Pellizari and Haushalter described it histologically as a true miliary tuberculosis developing along the blood vessels of the skin, demonstrated Koch's bacilli in the tissues and produced tuberculosis in guinea pigs experimentally. More modern investigators have observed that the lesions react to injections of tuberculin.

The disease begins in infancy or childhood and produces an abundant outbreak of minute, follicular, red-brown papules on the trunk. The sides of the chest, the back and the abdomen are the favorite seats of the eruption, the extremities being seldom affected, and the face almost never. As time goes on a red halo develops around the lesions, they increase in number and somewhat in size; tend to coalesce and to form groups, often crescentic or circular in shape; become more pinkish-yellow and slightly umbilicated; form a minute crust cap, producing the sensation of a rasp, and after months or years, if left untreated, disappearing spontaneously, leaving a tiny or perhaps invisible scar.

Erythema Induratum.

Erythéme induré des jeunes filles, Erythéme induré des scrofuleux, are the names which Bazin gave this disease when he first brought it to the notice of the dermatological world. The disease is fairly common in France, but rare in England. Curiously enough it is not an infrequent occurrence to make this diagnosis in Boston where we have learned to recognize it and to add several phases to it which Bazin never described.

The affection shows a strong predilection for the female sex and is most apt to begin during the second decade of life. Naturally, these rules are often broken and English observers and others have recorded cases in men and in women over fifty years of age. The primary lesion consists of one or more nodules which can be felt rather than seen deep down in the subcutaneous tissue of the lower third and posterior part of the leg. As time goes on the small nodule increases in size and the superjacent skin grows red and finally livid. After weeks or even months the lesion, which may now be the size of a pullet's egg, may be absorbed, in accordance with Bazin's original conception of the process, or may ulcerate leaving an indolent ulcer, clinically rather suggestive of a softened syphilitic gumma. In time a depressed cicatrix is produced.

This is the life history of the ordinary case, but exceptions are almost as common as the rule. The lesion may appear on the sides or the front of the leg; there may be several nodes at once; or, finally, there may be a succession of lesions on the arms as well as on the legs, and the disease may cover a period of years, leading, as in a case which I have observed this last winter, to a series of small, sunken, irregular scars, extending from the ankles to the groin and from the wrists to the elbows.

Pathologically the disease develops about a deep vessel in the neighborhood of the panniculus adiposus, sometimes as the result of a thrombus. Edema, perivascular infiltration, endophlebitis, fatty degeneration and epithelioid cells constitute

the usual picture. Thibierge and Fox have each been able to produce tuberculosis in a guinea pig by inoculation experiments, but such conclusive proofs of the intimate connection of the process with tuberculosis are usually wanting, and in my experience the disease is not strongly associated clinically with evident tuberculosis elsewhere in the individual.

Folliclis.

Our first knowledge of this many-named disease came from the pen of Hutchinson in 1879. In the following year Boeck studied the disease in his characteristic, clever way, and on account of his pathological findings christened it "lupus erythematosus disseminatus." In 1891 Barthé lemy noted the histological connection of the process with the hair follicles and gave the disease its shortest and perhaps most familiar name, folliclis. Since that time other dermatologists have investigated this distinctly rare affection and none have left it without a new appellation. Bronson styled it acne necrotica seu varioliformis of the extremities; Tenneson, granulome innominé; Dubreuilh, hidrosadénite disséminée suppurative; Allen, necrotizing chilblains; Hallopeau, tuberculides acnéiformes et nécrotiques, and later toxi-tuberculides papulo-nécrotiques; Darier, tuberculides; and finally other names, folliculites disséminées symétriques des parties glabres à tendance cicatricielle, folliculitis exulcerans, follicutes tuberculeuses, hidradenitis destruens suppurativa, scrofulides nodulaires dissöminées and spiradenitis suppurativa disseminata, whose originators I have been unable to find.

Folliclis is usually associated with other tuberculous processes and appears at any age from infancy up to forty years or even later. It seems to affect regions where the circulation is apt to be the feeblest, and consequently we find the typical lesions on the back of the fingers, hands, elbows, feet and less frequently on the ears. The extensor surfaces are the seats of predilection, but the palms and soles have been known to be attacked and, therefore, our term folliclis, is a misnomer. The disease is characterized by discrete, deeply-lying papules, at first the size of a pinhead, and slowly increasing to that of a lentil. Their tops are rounded, their consistency firm, and their color dull or violet red, with an inflammatory halo. In the evolution of the lesion there develops a vesiculating top which soon becomes an atypical pustule, and later changes into a yellow, tenacious crust which gradually dries leaving in its wake a depressed, temporarily pigmented, minute scar. The evolution of a single nodule requires four to five weeks, but the whole disease, recurring as it is wont to do in crises, may extend over a period of years.

Investigators have found the primary foci of inflammation about the pilo-sebaceous apparatus and in connection with the sweat glands, sites which have given rise to the various terms folliculitis and hidradénitis or spiradenitis, but it is safer to ally these initial points of origin to the vessels where peri- or endo-vascular changes give rise to edema and infiltration, which in its later stages may assume the characteristics of a tuberculoma. Tuberculin injections have repeatedly produced local as well as generalized reactions.

Acnitis.

In 1878 Tilbury Fox described this rarer affection under the name, disseminated follicular lupus. Kaposi mentions the same condition as acne telangiectodes, and another title, the origin of which is rather obscure, is acne agminata. It was not until 1891, however, that Barthélemy's researches allied the process to tuberculosis and produced the now generally accepted term acnitis. Objectively, the nodules have the same appearances and pass through the same phases that we have already described when speaking of folliclis, but they are somewhat larger, the life history and the whole cycle of the disease are slightly shorter, they lie much deeper in the skin, their favorite seat is the face, especially about the eyes and forehead, they do not tend to affect the follicles, they suppurate freely, they can be enucleated easily from the surrounding tissues, their pathological structure is more frequently and more closely analogous to the nodules of true tuberculosis and the bacilli of tuberculosis have been found in their invading cells. (Touton and Jadassohn.)

Acne Scrofulosorum.

Still another disease which authors have described in connection with tuberculous children and have designated by the name just quoted and by the longer titles, scrofulide acnéiforme and scrofulide pustuleuse. Clinically, the small papular, necrotizing and crusting lesions, which we have been describing in telling the story of lichen scrofulosorum, folliclis and acnitis, play the same rôle here. Histologically, they do not bear nearly so close a resemblance to tuberculosis as do the nodules of folliclis, but in all other characteristics they so intimately resemble the lesions of this disease that it seems unnecessary to my mind to place them under a separate heading.

Acne Cachecticorum.

A disease first described by Hebra long before the days of modern complicated dermatology. Hebra never linked the disorder with tuberculosis, but Grünewald and Darier observed cases so intimately associated with symbiotic tuberculosis that the latest textbooks are beginning to include the affection under the group of tuberculides. The eruption is a purely papulo-pustular one, usually upon the trunk, absolutely free from interlying comedones and, according to Crocker and other conservative writers, one which may occur in any debilitated subject. Structurally, no definite indications of tuberculosis exist.

Morbilliform and Scalatiniform Eruptions.

These conditions are the last in our list of eruptions occurring in otherwise tuberculous individuals. There is nothing truly specific in

their pathology. They are simply erythemata which appear on the surface of people's bodies when for some reason or other a wave of tuberculous intoxication sweeps through the system. As the result of some illness or some disturbing factor in the economy there is a sudden explosion from some tuberculous focus and a mass of tubercle bacilli or an extraordinary amount of their toxins are eliminated and carried by the blood stream to all parts of the body. They are perhaps akin to the "rose spots" of typhoid fever, the roseola of syphilis, the blush of cerebrospinal meningitis, or the intoxications of diphtheria or tetanus antitoxins. They are, however, much rarer than any of these exanthems.

CLASS III.

As already alluded to, far back in this paper, this division contains diseases much in dispute, but diseases which clinicians have observed more or less frequently in the tuberculous diseases, however, in which even their most enthusiastic votaries have never been able to demonstrate any tuberculous pathology, to isolate any tubercle bacilli or from which to produce any tuberculous process by animal experimentation. I refer to the following affections: eczemascrofulosorum, pityriasis rubra of Hebra, certain dyscromias, lupus erythematosus, angiokeratoma and lupus pernio.

I shall not speak of these diseases at all. Such a description would lead us too far afield and certainly take us far beyond the legitimate confines of tuberculosis of the skin.

Such, gentlemen, is my conception of the views of modern dermatologists regarding tuberculosis cutis, and, in conclusion, I must crave your pardon for this exceedingly long paper and beg to thank your president and yourselves for the honor and privilege of appearing before you tonight.

A CLINICAL AND LABORATORY STUDY OF THE THERAPEUTIC VALUE OF HYDROCHLORIC ACID IN DISEASES OF THE STOMACH.*

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THE discovery of hydrochloric acid as a constituent of the gastric juice is accredited to Prout, 1824. Probably the use of hydrochloric acid as a therapeutic agent in digestive disorders dates from about this time. It was not, however, until about 1871 that it was learned that this acid is absent or diminished in some gastric conditions. The discovery of this fact, together with the results already obtained from its empirical use, seemed to place the therapy of hydrochloric acid upon a very firm foundation.

For some years it was generally believed that all cases of severe dyspepsia would show an absence of this acid in the gastric secretion. Even as late as 1883, Leube expressed the belief that this condition would be met in all cases, except those of nervous origin. With this opinion established, it is evident that a strong impetus was given to the further employment of this agent.

But in 1885 Riegel announced the fact, which was soon confirmed by others, that in many cases of severe gastric disorders the secretions disclosed the presence of the *normal* amount of hydrochloric acid. Startling as this announcement may have proven, it soon became obvious that HCl should be employed *only* in those cases in which an absence or a deficiency of the natural acid existed.

With the majority of physicians here rests, the knowledge of hydrochloric acid therapy in stomach disorders, upon the foundation laid in 1885. Having given you, in brief, the history of the use of HCl up to this time, I can best present that not unimportant portion which remains, by quoting from some of our recent writers upon the subject.

Ewald,[1] Diseases of the Stomach. American translation of the third German edition, of 1893: "Hydrochloric acid is of the greatest importance in the treatment of chronic gastric catarrh, because it not alone replaces the deficiency in the secretion and forms acid albuminates so essential for peptonization, but, also, because it prevents abnormal fermentation, or lessens it, if already present. I order it in as concentrated watery solution as possible, to be taken three to four times after eating, at fifteen minute intervals (that is, about forty-five to sixty drops after each meal). I have employed this remedy for months at a time and without any bad effects."

Einhorn,[2] in his second edition of Diseases of the Stomach, 1887, says: "The medicaments were used to a much greater extent in the treatment of chronic gastric catarrh in olden times, than nowadays. At present we have learned to pay much more attention to diet, to hygiene, and to the mechanical means of treating the stomach. In some instances, however, the medicaments are also serviceable. Among them, HCl is one that is most frequently employed. The idea of supplementing the deficiency of the gastric juice by this acid, which forms its principal element, is most natural. The best way to administer this acid is to give it in drops, six to twelve of the dilute hydrochloric acid in a glass of water, to be taken three times a day, after meals."

Riegel,[3] Diseases of the Stomach, 1903: "Even if very large doses of hydrochloric acid are given in cases of subacidity, the deficit can hardly be compensated, for we can never give large enough quantities of the acid to cause the appearance of free acid in the stomach contents, in cases in which free HCl was absent before. Hydrochloric acid for therapeutic purposes has a much more limited field than is usually assumed. Judging from my own experience, I am inclined to attach the greatest importance to its stomachic powers (using it alone, or with the bitter tonics, before meals). Possibly, it has some value as a disinfectant. Finally, it may be given in order

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directly to aid digestion, although in the light of our present knowledge we can hardly expect marked results."

Such is the recently expressed opinion of a man who may be considered one of the pioneers in gastro-enterology; a physician who has observed the transitions of hydrochloric acid therapy from the time of its early empirical use down to almost the present day.

Mathieu,[4] in 1894, said, "When stasis and fermentation are present HCl may be given in twenty to forty drop doses after meals."

In 1900 he said:[5] "I have of late renounced almost entirely the substitutive method of giving HCl on account of the difficulty of giving sufficient doses to obtain results. Very often I have given very small doses of HCl in cases in which they appeared to excite the motor and secretory functions of the stomach. My object was to increase the appetite without the risk of irritating the stomach."

Klemperer,[6] in 1895: "When acid is lacking, one has to choose between sodium chloride and HCl. The latter should be given during digestion, four drops one hour after meals, then six to eight drops at periods of one-half hour. It is more rational, however, to substitute the sodium salt which gives off the acid in the stomach and stimulates the secretion of the glands."

Linossier[7] said, in 1900: "HCl is no longer used to supply a deficiency, but for some accessory properties more or less well established, as its action upon the appetite, its antiseptic properties, etc."

Hemeter,[8] in his work on Diseases of the Stomach, 1897, advocates the use of large doses of HCl. In an article, in 1903, he says:[9] "Since Prout's discovery of HCl in the gastric juice, this chemical substance gradually became the panacea for all digestive disorders." From this extreme view we have, in recent years, drifted to the opposite extreme, according to which HCl as a therapeutic remedy is entirely dispensable. He still, however, favors its employment.

Thus, you see, no consensus of opinion prevails, yet a general tendency to limit the use of the acid is shown by the later writers.

In entering into the consideration of this subject, let us first note the objects of HCl administration.

1. HCl * in small doses, five to ten drops, either alone or combined with the bitter tonics, is given usually before meals, as a stomachic.

2. In large doses, fifteen to twenty drops, three or four times after meals, it is used to supply a deficiency of HCl in the gastric secretions. The secondary objects to be attained by such use are: (*a*) to aid digestion; (*b*) to overcome or prevent fermentation.

3. It is used in both large and small doses with pepsin, with the object of rendering the stomach contents sufficiently acid to enable the pepsin to act (as it is well known that pepsin is inactive except in a properly acid medium).

* Acidum hydrochloricum dilutum U. S. P. = 10% of absolute HCl.

4. Some believe that this acid stimulates both gastric secretion and peristalsis, also that it excites pancreatic secretion. The acid may be employed with other objects, of which I am unaware.

Experiments to determine the various influences of HCl in the stomach have been made upon animals, healthy individuals, and upon persons with gastric disorders. Undoubtedly the most practical way to ascertain *certain* effects of this agent is to administer the acid to individuals in whom its use seems indicated, carefully noting its results by the various means at our command. But certain requisites are necessary to such experiments. One must have subjects whose gastric secretions have shown an absence of free HCl for a considerable period of time, and such absence must result from organic conditions. The influence of the acid used must not be modified by the use of other drugs or medical means. The subjects must be willing to co-operate with the experimenter, to follow directions *not only* as regards the use of the acid, but also as to the diet, habits, etc. *Only* tests carried out under such conditions and during long periods of observation can prove of much value. In order to present to you the clinical results obtained from the use of HCl in these cases, and that you may be better able to estimate the value of the laboratory tests, it becomes necessary to give a brief history of each case.

CASE I. Oct. 9, 1903. Female, aged thirty-four, married, does her own housework. Stomach trouble since childhood. Appetite excessive, eats five or six times daily. Pain, almost always, with fasting stomach. Relieved by eating. Eructation and regurgitation, considerable. Nausea and vomiting daily of late.

Physical examination: In June, 1903, weighed 99 pounds. Has never weighed 100 pounds. Heart, lungs and urine negative.

Palpation, negative, except left nephroptosis, first degree.

Inflation and percussion: Greater curvature of stomach two and one-half inches below navel and below left costal border.

Fasting contents, amount 30 cc., consisting of food and mucus. Free HCl = 0. Ewald test breakfast, amount 40 cc., three-quarters food, mucus abundant. Free HCl = 0. Total acidity, = 24 per C. Combined HCl = .4 per M. Peptic digestion much delayed.

Diagnosis, chronic gastritis and moderate mechanical insufficiency.

Patient was treated by proper diet, bi-weekly lavage of the stomach, and a saline before meals until Jan. 15, 1904. All subjective symptoms disappeared. The mucus was reduced to a minimum, the motor power of the stomach became normal, and the weight increased to one hundred and nine pounds. The gastric acidity remained practically unchanged.

Jan. 15. I began the use of HCl, 15m. repeated twice at fifteen-minute intervals after meals. No other treatment was employed. In the beginning the urine was increased in amount, and the patient thought she felt better, but later decided that she felt as well when not taking the acid. The acid was taken faithfully from Jan. 15 to Feb. 23, thirty-nine days. During this period I made ten examinations of the gastric con-

tents. As a result of these tests I concluded the acid was diminishing the secretion of HCl by the stomach, and consequently discontinued its use, although the patient was not conscious of any injurious influence. Later, lavage with sodium chloride, intragastric faradism, etc., failed to cause a return of free HCl.

May 2, 1905. Patient reports no gastric symptoms whatever. The weight has increased to 116 pounds. Total observation of case, nineteen months.

CASE II. April 1, 1904. Female, twenty-six, married. Does part of her housework. Stomach trouble since fourteen years of age, worse for the past four years. Appetite usually good, oftentimes unsatisfied. Pain in the mid-epigastrium without regard to meals. Eructation, gaseous, frequent, and without regard to meals. Bowels constipated.

Physical examination: Standard weight, 150 pounds, now 118 pounds. Heart, lungs and urine negative. Palpation negative, Size and position of stomach, normal. Fasting contents, none. Ewald test breakfast, after one hour, no contents. Double Ewald test breakfast, after one-half hour, amount 30 cc., two-thirds crumbs. Free HCl = none. Total acidity 22 per C. Combined HCl = .4 per M.

Diagnosis, chronic gastritis and pyloric insufficiency.

The patient was treated from April 1 to July 10 by lavage, diet, etc., with marked improvement in all subjective symptoms, but without any material change in the gastric secretions. There was a loss of weight from 118 to 114½ pounds.

On July 10, I ordered HCl, 20 drops, and repeat once, after each meal. While under close observation the acid was taken twenty-four days, during which period I made seven examinations of stomach contents, and in all about fourteen examinations.

The patient said the acid produced an agreeable feeling in the stomach. At the close of observation I advised the use of 20 drops of HCl after each meal as long as it seemed to do good. At this time the patient went into the country for the summer.

April 21, 1905. Patient reports feeling practically well. Thinks she belches more gas than she should. Still takes a dose of the acid occasionally.

Total observation of case thirteen months.

CASE III. March 4, 1904. Female, twenty-six, single, domestic. Referred to me by a physician, with the statement that there had been for some time a marked deficit of HCl in the secretion, but the subjective symptoms had much improved with treatment. Stomach trouble for two and one-half years. Appetite poor. Pain, formerly, in mid-epigastrium, after meals. Eructation and regurgitation after meals. Nausea often, but no vomiting. Bowels, constipation, using cascara. Frequent micturition, backache and other symptoms, pointed to pelvic trouble.

Physical examination: Standard weight, 155. Present weight, 155 pounds. Heart, lungs and urine, negative. Palpation, negative except tenderness over the bladder and in left iliac region. Size and position of stomach, normal. Fasting contents, none. Ewald test breakfast, amount 100 cc. three-quarters food, mucus in excess. Free HCl = none. Total acidity = 8 per C. Combined HCl = none.

Diagnosis: Chronic gastritis or achylia gastrica and pelvic trouble. The patient had taken HCl previously, had also had lavage, diet, etc. I ordered HCl, 8 drops after meals. It was taken from March 8 to April 27, fifty days; at this time the patient underwent a surgical operation. Later, the patient stated that she felt no better while using the acid.

CASE No. 1. TABLE No. 1.

Number.	Date.	Test meal used.	Amount HCl used.	Period after meal.	Amount contents.	Free HCl.	Total acidity.	Combined HCl.	Period of peptic digestion.	Rennet.	Rennet zymogen.
	1903		Minims	Minutes	CC.	per M.	per C.	per M.	Hours		
1	Oct. 9	Ewald	0	60	40	0	24	.4	—	—	—
	1904										
2	Jan. 22	"	0	60	40	0	22	.5	—	—	—
3	Jan. 26	"	40	60	100	0	25	.3	—	—	—
4	Jan. 29	"	40	60	200	1.1	51	.4	3½	—	—
5	Feb. 5	"	45	60	180	.8	42	—	—	—	—
6	Feb. 9	"	0	60	30	0	18	—	—	—	—
7	Feb. 12	*Sandwich	45	70	230	0	40	—	—	—	—
8	Feb. 16	"	50	60	200	0	44	.6	—	—	—
9	Feb. 19	Ewald	0	60	45	0	12	.1	6	—	—
10	Feb. 23	Sandwich	75	75	60	0	40	.5	15	0	—
11	Feb. 26	Ewald	0	60	65	0	14	.3	6½	+	—
12	March 1	Sandwich	60	60	100	0	36	.5	13	0	—
13	March 3	"	45	60	100	0	20	—	11	0	—
14	March 8	"	0	60	90	0	28	.6	8	+	—
15	March 11	"	60	60	80	0	18	.3	11	0	+
16	March 15	Ewald	0	60	95	0	16	.5	7	0	—
17	March 22	"	0	60	45	0	18	.4	—	—	—
18	March 25	Sandwich	0	60	140	0	20	.4	—	—	—
19	June 1	Ewald	0	30	30	0	18	—	—	—	—
	1905										
20	May 2	"	0	45	65	0	18	.3	8	—	—

*Sandwich — bread, gm. 70. Meat, gm. 100.

Nov. 7, 1904. Reports that she now has no stomach trouble. Free HCl absent.

In presenting the results of these experiments, this explanation should be made. It was not the original object of these tests to determine all of the various influences of HCl here shown. Had the purpose been such, the conduct of the work might have been different. On the other hand, some of the results obtained are enhanced in value by the fact that they were not anticipated.

1. The immediate effect of large doses of HCl upon the acidity of gastric contents.

CONDITIONS OF TESTS.

Twenty minims of HCl was given in 90 cc. (3 oz.) of water two or three times, at 15-minute intervals after an Ewald test breakfast. One

hour after the meal was given the gastric contents was withdrawn and the acidity tested. Three such tests were made in Case I, and one test in Case III — four tests. Results: The total acidity of contents was always increased, and in three of the four tests, free HCl was present in appreciable amounts. In one test, it was absent.

2. Effect of larger doses of HCl, given after a larger meal.

Fifteen to 25 minims HCl was given in 90 cc. of water three times within an hour after the ingestion of a large meat sandwich (bread 70 gm., meat 100 gm.) and 300 cc. water.

Six tests were made in Case I, two tests in Case II, and one test in Case III — nine tests in all.

Results: Sixty to seventy minutes after the meal was given the total acidity of the gastric contents was always found increased, but free HCl was *never* present.

at 1,000 cc. or one quart, after an ordinary meal, it is seen that nearly 1 oz. of 10% HCl would be required to supply the deficit of this secretion if the natural HCl were absent. Consequently the 75 minims HCl, the largest amount used in these tests, could supply only a small part of the deficiency of HCl which existed in these cases.

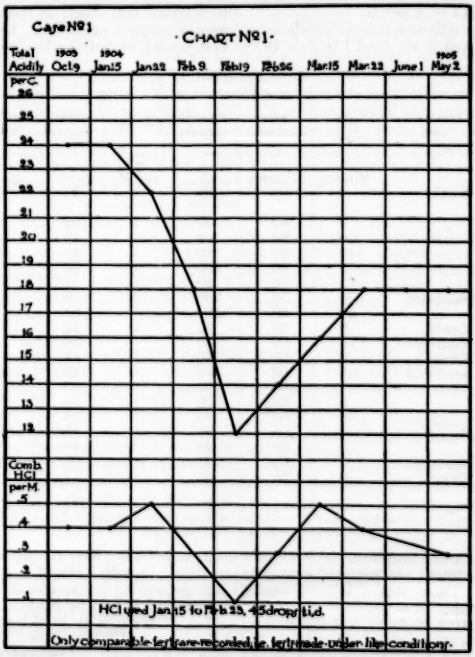
From the results of the above tests we learn that it is impracticable to administer enough HCl by mouth to supply the deficits of HCl in the gastric juice ordinarily encountered. *Therefore the objects attempted by large doses of the acid are either not at all or but partially attained.*

3. Effect of long continued use of large doses of HCl upon gastric secretion.

After observing Case I about three weeks, during the use of 45 drops of HCl three times daily, I suspected that the acidity of the secretion had slightly diminished. The tests made during the following ten days convinced me of it. Feeling that this diminution of acidity resulted from the use of HCl, and nothing else, I discontinued it, believing that it was exercising only a harmful influence, although the patient complained of no unfavorable symptoms.

After the discontinuance of the HCl, the gastric acidity gradually increased, though never quite reaching its original degree.

The acidity curves of Case I, chart No. 1, well illustrate these variations in gastric acidity.



To some these results may seem surprising. Yet by those familiar with the normal and abnormal gastric secretions, such results would be expected.

The amount of HCl of the normal gastric juice is about 2.5 gm. per 1,000 gm. secretion. (About forty minims of absolute HCl to each quart of juice.) 2.5 gm. or 40 minims of absolute HCl equals 25 gm. or nearly 1 oz. of 10% HCl. Therefore, estimating the amount of gastric secretion

Case II. The patient took 40 drops HCl after each meal for twenty-four days. During close observation of this case, I noticed no marked diminution in the gastric acidity, yet at the end I found that the average acidity after the use of HCl was noticeably less than before its administration.

The comparable tests of table No. 2 show an average total acidity of 26 per C. and an average combined HCl of .466 per M. previous to the use of HCl. During the use of the acid the average total acidity was 22 per C. and the average combined HCl was .35 per M.

Case No. 2. TABLE No. 2.

Number.	Date.	Test meal used.	Amount HCl used.	Period after meal.	Amount contents.	Free HCl.	Total acidity.	Combined HCl.	Period of peptic digestion.	Rennet.	Rennet zymogen	Lactic acid.
	1904		Minims	Minutes	CC.	per M.	per C.	per M.	Hours.			
1	April 1	Ewald	0	30	20	0	22	.4	0–24	0	—	+
2	April 9	"	0	30	10	0	—	—	—	—	—	—
3	May 12	Sandwich	0	40	120	0	26	.5	0–24	0	—	+
4	May 16	"	0	40	60	0	26	—	0–24	0	—	—
5	June 14	"	0	35	75	0	28	.4	0–24	0	—	+
6	July 7	"	0	30	60	0	24	.5	0–24	0	—	—
7	July 11	"	40	60	120	0	40	.6	18	0	+	0
8	July 15	"	60	60	110	0	40	.5	18	0	+	0
9	July 19	"	0	45	90	0	26	.3	0–24	0	+	+
10	July 22	"	0	40	65	0	20	.3	0–24	0	+	+
11	July 26	"	0	40	350	0	20	.4	—	—	—	+
12	July 29	"	0	50	180	0	22	.4	—	—	—	—
13	Aug. 2	Ewald	0	50	10	0	—	—	—	—	—	—
14	April 2, '05	Sandwich	0	50	5	0	—	—	—	—	—	—

Case No. 3. TABLE No. 3.

1	1904	Ewald	0	60	100	0	8	0	11	0	+	—
2	March 6	"	0	60	40	0	—	—	13	0	+	—
3	March 8	"	60	60	100	.65	34	0	6	+	+	—
4	March 11	Sandwich	60	60	40	0	—	0	9	+	+	—
5	March 14	Ewald	0	60	60	0	8	—	—	—	—	—
6	March 21	"	0	60	60	0	12	0	10	—	—	+
7	March 24	"	0	60	10	0	—	—	—	—	—	—
8	June 14	"	0	60	40	0	7	—	—	—	—	—
9	March 26, '05	"	0	45	8	0	—	—	—	—	—	—

The acidity curves of Case II, chart No. 2, also make this point plain.

Case III. The patient took 8 drops HCl after each meal for fifty days. The four comparable tests made during the observation of the case show practically no change in the gastric acidity. The total acidity was always very low, and HCl was always absent.

The observations of Cases I and II show conclusively that during the use of HCl the gastric acidity was diminished. In Case I the reduction of gastric acidity during the use of HCl and its subsequent rise after its discontinuance, shows almost beyond question that it was the HCl that caused the diminution of acidity. Observation of Case II tends to show a similar effect of the acid.

It is my impression that the depressing influence of HCl upon the gastric acidity is not generally recognized. In fact, most writers speak of a contrary effect, a stimulative action, and refer in particular to the experiments of Reichman and Mintz and of Du Mesnil.

Reichman and Mintz,[11] in 1892, observed five patients from two to four weeks, and upon each patient made two to five tests of the gastric secretions, during the use of HCl.

In four of these cases free HCl was absent in the beginning; after the use of HCl, free HCl returned in three cases, and in one case it returned temporarily. In another case in which free HCl was present, after the use of this acid there was an increase in the amount.

From these meager observations they concluded that HCl is a stimulant to gastric secretion.

A sufficient report of their cases is not given to enable one to judge of the causes of the diminished acidity, but it is not improbable that in some of the cases the cause was a functional one, and in such cases a return of free HCl may occur *without any* treatment whatever.

Du Mesnil's [12] experiments were made upon individuals whose gastric secretions were normal. As Riegel very properly states, Du Mesnil's results show nothing more than might be met in the normal fluctuations of gastric acidity, and even if they might be interpreted as showing that HCl increases the gastric acidity in health, it by no means follows that the same influence would be exercised in organic diseases of the stomach.

In the earlier times of gastro-enterology these observations of Reichman and Mintz, and of Du Mesnil, undoubtedly seemed highly creditable, but to-day, we know that from such limited

observations no very definite deductions can be drawn.

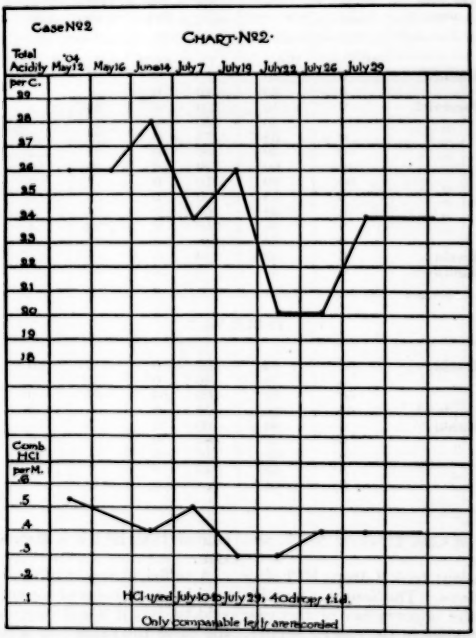
Riegel,[13] in 1889, reported a case in which he used HCl, and different authors have cited this case as a proof of the efficacy of this acid as a stimulant to gastric secretion, but Riegel says, "I, personally, am not inclined to consider it a proof."

Reed's observations, in his text-book, seem to be based mainly on his clinical experience, and a study in particular of some cases which he has reported.[14] He says, "In the condition of deficient secretion of the gastric juice, as in atrophic gastritis, prompt beneficial results are obtained by the use of HCl, five to thirty drops, combined usually with pepsin. The truth is, that the usefulness of HCl consists mainly in its action upon the secreting cells, and probably not to any considerable extent upon its power of supplying the place of absent or deficient gastric juice." My own experience, which is amply supported by that of numerous other careful observers, proves beyond question that HCl does, in many cases, gradually bring up the secretion of the normal acid of the stomach to its proper level when deficient, or even almost absent, previously.

The use of pepsin, combined with HCl, has for some time been abandoned by most men familiar with gastric therapeutics. Its inutily is so well recognized by practically all who are acquainted with the subject, that its discussion seems entirely uncalled for. The support of which he speaks, of "numerous other careful observers, that HCl is a stimulant to gastric secretion," cannot, I believe be considered as reliable support.

Reed's cases were more closely observed and for longer periods than those of Reichman and Mintz, and herein his results are more valuable. His concluding statement, however, furnishes a fair estimate of the value of his observations. He says: "Such fragments of clinical experience do not demonstrate beyond question that HCl stimulates gastric secretion, — yet there is a strong presumption as to this effect."

In estimating the stimulative action of any drug upon gastric secretion in patients, the important rôle of an unirritating diet and good hygiene must not be overlooked.



Absolute proof of a stimulative action of HCl upon secretion will ever be more difficult to obtain than evidence of the negative, or depressing influence.

Pawlow,[15] who introduced 200 cc., .1 = .5% HCl solution into dogs' stomachs, failed to observe any influence upon the secretion of HCl by the stomach.

Henne [16] introduced pepsin and 400 cc., .25% HCl solution into the human stomach and examined the gastric contents thirty to forty minutes later. His results, as to stimulation of secretion by the stomach, were negative.

Wolf [17] gave twenty-five drops HCl after meals, and observed no stimulating effect upon secretions.

Stewart,[18] in 1893, treated three patients with HCl, from three weeks to five months, and free HCl did not return. Later he employed lavage, and electricity in two of these cases, and the HCl returned. He concluded that HCl is of no use in establishing the natural secretion.

Jaworski,[19] in 1887, carried out some very extensive experiments with HCl, upon patients. He concluded as follows: "The introduction of 200 cc., .1 = 1–20N HCl solution into the human stomach (in various gastric disorders) had no more effect upon HCl secretion than distilled water; but, after long use of the acid, HCl secretion was depressed."

In so far as I have been able to learn, from a fairly careful search of the literature, Jaworski is the only investigator who has recognized the depressing influence of HCl upon gastric secretions. It is gratifying, indeed, to be able to confirm his observations, and I trust our united results will tend to call attention to the depressing effect of HCl upon secretion, an influence of which most writers seem to be ignorant, or to discredit.

I have dwelt at some length upon the action of HCl on secretion, because it is, I believe, the most important function of this agent. If HCl is a stimulant to gastric secretion, it is a valuable, curative, therapeutic remedy; if it is a depressant to secretion, it is a harmful agent.

4. The effect of large doses of HCl upon peptic digestion.

In Cases II and III the use of large doses of HCl always accelerated peptic digestion.

In Case II, when no acid was given, the time of digestion exceeded twenty-four hours, after proper acidulation. When the acid was used, digestion took place in eighteen hours, as shown by two tests.

In Case III, when no acid was given, the average time of peptic digestion was about eleven hours, after proper acidulation of the juice. When the acid was used, digestion occurred in from six to nine hours, after proper acidulation.

In Case I the average time of peptic digestion was about seven hours when no acid was taken. When the acid was given, peptic digestion was delayed from four to eight hours, as shown by four tests. Yet when the acid was given with the lighter meal, and the gastric contents rendered positive to free HCl, digestion was accelerated to the short period of three and three-quarters hours.

These tests show that, as a rule, peptic digestion is accelerated by the use of HCl, and this, I believe, is the prevailing opinion.

Yet the four tests in Case I, tests 10, 12, 13 and 15, show that in certain conditions large doses of HCl may, in some manner, retard peptic digestion. This latter effect of the acid was a surprise to me, and I am unable, except by conjecture, to account for this action.

My experiments throw little or no light upon the anti-fermentative action of HCl or its effect on gastric peristalsis.

We know that when present in sufficient amount HCl inhibits lactic acid fermentation. We also know that sarcinæ ventriculi, under certain conditions, thrive in the presence of the normal or even increased amounts of HCl, and that yeast fermentation occurs under the same conditions.

Some believe that HCl stimulates gastric peristalsis, but anyone who has had much experience in the treatment of gastric diseases knows that we possess *far more* efficient means of stimulating this function of the stomach.

Some writers are inclined to attribute a beneficial influence to HCl through its stimulating effect upon pancreatic secretion. Pawlow [20] has shown conclusively that the introduction of HCl into the fasting stomachs of dogs excites the flow of the pancreatic juice. The stronger the HCl solution, up to a certain limit, the greater the amount of secretion. But the administration of small or even large doses of HCl after meals, in cases in which the gastric acidity is much diminished, is quite another proposition. Under such conditions, as we have seen, the acidity of the stomach contents is never increased to any considerable extent. For this reason, probably, pancreatic secretion is not stimulated much more than when no acid is used. Moreover, it is a question if there is ever any need of such stimulation.

The sum and substance of the experiments and the consideration of the literature here presented yields but little in favor of the use of large doses of HCl, and some evidence that such employment of the acid may be harmful. On the other hand, most writers advocate the use of small doses of HCl. *I believe such use of the acid oftentimes results in the alleviation of certain symptoms, but question if it ever improves any function of the stomach.* The strong sentiment which prevails in favor of the use of HCl has arisen mainly from the numerous favorable results obtained from clinical experience. In estimating the value of such experience let it be remembered that the vast majority of gastric disorders are of nervous origin, and that probably 90% of these cases disclose the presence of the normal or increased amounts of HCl. Yet it is chiefly from *this* class of cases that the favorable results from the empirical use of this agent have been obtained. What, then, is the value of such experience? The test, it must be admitted, is not a correct one by which to ascertain the therapeutic value of HCl, because it is generally conceded that the use of this acid is not indicated in such cases.

Clinical experience in gastric therapeutics today is not the same kind of experience as was implied by the term twenty or even fifteen years ago.

Now we possess fairly accurate means of determining the action of drugs upon the various functions of the stomach. When these means are employed, then, and only then, we should and the most of us are willing to abide by the results obtained.

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OCULAR VERTIGO OF INTEREST TO THE GENERAL PRACTITIONER.*

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THERE is one point not directly related to the subject selected that I desire to mention before proceeding. For a number of years past a rather strenuous discussion as to the failure of the general practitioner to properly recognize the results of impaired ocular functions in the production of many of the disturbances which come under his observation has been carried on by some of the leading men in my specialty. That all the knowledge pertaining to the relations of the eye and the other organs of the body is desired, and will be readily accepted, and so far as possible utilized by the intelligent practitioner, I feel very sure. But in order to be available, such information should be presented as much from the standpoint of the general practitioner as possible, and it is important that it should be given with the knowledge that the eye is only one of the many organs which he has to consider in reaching conclusions leading up to a diagnosis. And finally that such labor should be in the form of friendly co-operation rather than in the spirit of a man having a larger knowledge.

I confess to a lingering suspicion that all of these factors have not been met in the discussions above referred to, and I interpolate these remarks here because it is eminently desirable that the specialist should have the most friendly co-operation of the general practitioner. That the writer may contribute toward furthering such a desirable end is one of the objects of this paper.

OCULAR VERTIGO.

For several years vertigo as a symptom has been making its appearance in the histories of my cases of refraction, every once in a while standing out with particular prominence, and I had come to take it as a matter of course, as one does headache, blurred vision or the disturbances of digestion, associated with uncorrected defects of vision. But some time ago I read an article in which the writer, though admitting the possibility of vertigo resulting from eyestrain, did not consider it either common or important. This was so contrary to my own experience that I not only instituted a careful review of my old histories but I have inquired with more detail into the histories of the patients that have consulted me since, with the result that I am convinced that ocular defects are a common cause of vertigo.

By vertigo I mean that feeling as if external objects whirled around the person affected, or as if he himself had been whirled; in other words, that disturbance of equilibrium commonly known as giddiness, swimming of the head, or dizziness.

Of the vertigo which forms a part of the symptoms of many diseases, such as cerebral affections, lacking ocular manifestations, derangements of the digestive functions or of the circulatory system, I will have nothing to say; you are probably more competent to speak of that than I. Nor again do I intend to cover that interesting phase of the subject which is met with in functional and organic diseases of the auditory apparatus, though it is barely possible that aural and ocular vertigo may be closely associated.

Ocular vertigo, as I have seen it, seems to group itself under three heads:

1. That form seen in paralyses of the ocular muscles resulting from an interruption of the nerve supply of the latter.

2. That seen in paretic states of the ocular muscles, or, more properly speaking, ocular muscle imbalance.

3. That type accompanying errors of refraction, or what is commonly known as the eyestrain.

CLASS I.

Of these three forms, that accompanying paralyses of one or more of the ocular muscles has, without doubt, come under your observation, particularly if, as is usually the case, it is associated with that annoying symptom, diplopia or double vision, and I think it is safe to say that in such cases the vertigo is an effect of the diplopia. The two eyes, each forming a separate and distinct image upon their respective retinas, compels the patient to endeavor to separate the true from the false. This effort produces confusion, resulting in anything from a slight whirling sensation to pronounced dizziness, causing one to stagger or even to fall over.

To illustrate such a condition, I will cite the history of a young man, twenty-six years of age, and a mechanic by occupation. A few days before he consulted me, he began to notice a doubling of objects and a distressing dizziness, often feeling even nauseated, and he thought that he would be obliged to give up his work if this symptom continued. External examination showed almost a complete ptosis or drooping of the left upper eyelid, which upon being elevated by the finger, showed the eyeball markedly diverged or turned outward, and the patient was as unable to adduct or turn the eyeball toward the nose as he was to raise the upper lid. In addition, the pupil was widely dilated and he could not read the coarsest type, showing that the internal muscles of the eye, as well as the external group supplied by the motor oculi, were involved.

*Read at the Annual Meeting of The Massachusetts Medical Society, held in Boston, Mass., June 13, 14, 1905.

His family history was negative, and though he denied any specific history I could not find any other accountable cause; so, fearing that his memory had been affected as was his motor oculi, I put him on specific treatment and he made a steady though slow gain upward. But for a long time after he was able to raise his upper lid and move the eye inward past a line drawn through the center of the orbit, yet upon removing the blinder from the affected eye and taking a few steps, he would commence to reel and feel faint from dizziness, but eventually his ocular symptoms entirely disappeared. This first example of the production of vertigo under class one is a good illustration of disease acting as the cause and this disease affecting some part of the central nervous system.

One may also have an accident acting as the cause and the nerve being affected along the course of its distribution. This is illustrated by the following:

Mrs. M. W., aged fifty-two, while walking in the woods tripped over a stump of a tree and, falling forward, struck upon the forehead and right eye. The eyelids rapidly became swollen, and in two hours the eye was closed, owing to the edema. Hot applications and a pressure bandage were used for three days, when she was able to open the eyelids. She then noticed for the first time that the vision was much reduced, that all objects appeared double and that she was unable to walk, owing to dizziness, unless she kept the affected eye covered. The double vision remained about four weeks but it was two weeks later before the vertigo disappeared. So much for class one.

CLASS II.

Under class two, or vertigo caused by lack of proper balance of the external eye muscles, I would say that I am not sure that a distinct line of demarkation can be drawn between the results of muscular imbalance and that produced by uncomplicated eyestrain resulting from an error of refraction, for as yet I have not seen a case of pure muscular imbalance unassociated with some visual defect.

But that faulty eye muscles may be the predominant factor in the production of the vertigo will appear in the further discussion of the class now under consideration.

I have had occasion to use the expression "muscular imbalance" several times, and it may be pertinent for me to explain just what I mean by that phrase. Perhaps I can best make it clear by telling you what I understand to be normal ocular muscular balance. Some one has likened the external eye muscles to a harness, and the eyeballs may be said to be swung and held taut in the orbits by this delicate muscular equipment, the four recti muscles tending to draw the globe backward in the orbit and this action being opposed by the tendency of the two obliques to pull it forward. The successful accomplishment of this act presupposes a slight contraction on the part of all the muscles engaged. These muscles, when properly acting, produce a co-ordination of the visual axes, so that when the eyes are directed toward an object these axes will meet exactly in that object, and thus the eyes are said to be balanced.

Of course, the process of accurate and comfortable focusing is more complex than this, but the harmonious action of all these muscles is fundamental, and it requires no stretch of the imagination to realize that a constant regular flow of nerve force is also essential.

Now this muscle balance, may, from a number of causes of which this paper does not treat, be perverted, and we have muscular imbalance, for if a single muscle or a group of them fails to act conjointly with its fellow or fellows, we have one globe out of parallel, the extent varying from that only possible to measure by delicate instruments to the form discussed under class one of this paper.

Among the many manifestations of this friction resulting from a lack of proper muscle balance is the vertigo of which I am speaking, and its differentiation from classes one and three can be best illustrated by the study of the following history:

A young man consulted me five years ago with the regulation symptoms of eyestrain, but including vertigo, the latter being particularly marked upon going up or down stairs or in other ways changing his elevation. An examination of the eyes showed a small amount of long sight, a great deal of astigmatism, and to all external appearances he had normal muscular balance; but, upon making the regular muscle tests, he was shown to have a marked tendency to abnormal convergence, both when looking at distant objects and at the near point; that is, he could not fix on an object for an instant with both eyes: this effort caused fatigue of a certain group of ocular muscles, the latter would relax, and their antagonists draw the eyes inward. By considerable effort he would balance things again, and thus he see-sawed thousands of times daily.

I first corrected his refractive error, as it was impossible to say at the time which was the predominant cause of his symptoms. I advised his return within a specified time, but, not getting the relief he had hoped, he consulted some one else, who prescribed prisms, which for a time gave him partial relief from his severe headache and annoying vertigo. This cessation of his symptoms was only temporary, however, and in due time he returned to me and submitted to an operation on his eye muscle, and he has had a large measure of relief ever since.

This case shows vertigo the result of muscular imbalance not dependent, at least to any great extent, upon the associated eyestrain.

CLASS III.

In the third class of cases, or vertigo associated with errors of refraction, we find the symptom not at all uncommon, and though I have case records of its occurrence during all periods of life, the most typical examples are seen in those patients who have for years been able to ignore an uncorrected focal error of vision, until the beginning of pres-

byopia puts an additional burden upon the ocular functions, rendering further comfortable vision, without artificial aid, impossible.

If time permitted, one would be tempted to cite cases illustrating vertigo due to refractive errors and occurring during the different periods of life, but I think I will offer you more practical help if I confine myself to those examples occurring about, and probably dependent upon, the development of presbyopia.

I have selected three cases, in all of which the vertigo was the most annoying symptom, and they had all faithfully coöperated with their family physician, in the endeavor to locate the cause of the difficulty.

Number one was a merchant forty-six years of age, first seen about two years ago. He had worn glasses for close work for the previous four or five years, always going to a jeweler when in need of anything in that line. For the past three years he had had some headache and eye-pain, which he had steadily ignored, but of late he has had fainting attacks preceded by dizziness. These so-called "spells" are brought on by a hard day's work or if he looks intently at rapidly moving objects, and when he stoops over and quickly assumes the upright posture. He was thoroughly discouraged, because for the past year he had taken different kinds of drugs prescribed by his family physician, and instead of the attacks lessening they had steadily increased, both in severity and frequency. He had about decided to sell his business because his failure to get relief had convinced him that he was developing some brain disease. He came to me simply because a friend with similar symptoms had been relieved by the use of glasses. He was frank to say that he was extremely skeptical as to the influence of the eyes in producing any such trouble. The usual visual tests were made and he was found to be able to read the regular size test types at the normal distance and, with the proper strength glass, was given acute vision at a comfortable reading distance. He also had normal muscular balance. In view of his history, however, one was warranted in suspecting that his ciliary muscles were concealing a focal defect and I advised a complete rest of the eyes from close work for ten days. At the expiration of this period of time he returned, and I paralyzed his ciliary muscles and was gratified to find a small amount of far-sighted astigmatism in the right eye, and a like amount, but of the near-sighted variety, in the left, and the axes of both oblique instead of horizontal or vertical, as is by far the more common.

I neutralized this error by the proper glasses to be worn constantly, gave him an additional pair for close work, and at the end of three months he wrote me that "The glasses helped me a sight." I have seen him twice to change his distant glasses, and in the twenty months since the second examination he has not had an attack of vertigo, and has been practically free from his other ocular symptoms.

Number two was a man forty-eight years of age, and a worker on fine mechanic tools. He is constantly using a gauge scaled to one one-hundredth of an inch. I first saw him in November, 1902, when he told me that for five years previously he had had intermittent attacks of severe pain in the back of the head, preceded or followed by mild attacks of vertigo. For a year before the attacks of dizziness had been growing more frequent and severe until he finally gave up his shop work and secured employment out of doors. At once his "dizzy habit" disappeared, but not associating this relief with non-use of his eyes, after several months he decided to return to his trade. Immediately the old symptoms returned, and as before he held regular conferences with his family physician, but without relief.

Some one finally suggested the possibility of the eyes being at fault, and he came to me, as an oculist, not with much hope, but because he desired to eliminate the eyes as a possible factor. He declared that his distant vision was as acute as ever or as it need be, and that his impaired vision for near work was no more than would be expected at his age. Both of these statements I found to be practically true as far as acuteness of vision was concerned, and there was no lack of co-ordination of his ocular muscles, but I felt justified in treating him as I had the patient above described as number one.

Under paralysis of his ciliary muscles, and after prolonged hunting, I dislodged a full diopter of far-sighted astigmatism in both eyes, with the axes oblique as in the other case. Just as soon as this defect was corrected by constantly wearing his glasses and compensation for his presbyopia made for near work, he commenced to have freedom from his symptoms. He reports to me periodically and for over two years he has been entirely free from vertigo, and only has a headache when he commits some indiscretion in eating. He has followed his trade constantly since beginning to use the glasses first prescribed.

Number three was a woman between the ages of thirty-five and forty. I first saw her about two years ago. For seven years previously she had had several attacks of vertigo. These attacks would come on suddenly, and were associated with blindness or blurring of vision. During the past year they have not only been very annoying but even dangerous, and because of them she was prevented from doing many of the necessary details of housekeeping. She had to exercise great care in going up and down stairs; to stand on a chair or step-ladder without falling was impossible. She was very despondent, for she had not had any relief from drugs. She was extremely nervous and irritable, both of which, combined with the attacks of dizziness, she felt were unmistakable evidence of an approaching brain malady.

She had never had any visual defect, and was reluctant to submit to an ocular examination, but did so upon the earnest solicitation of her husband.

Examination of the visual acuity revealed the

fact of lowered vision in the right eye, normal vision in the left eye, a large amount of far-sighted astigmatism in both eyes, with the axes again oblique, and practically normal ocular muscle balance. As she positively refused to submit to an examination under a cycloplegic, I was obliged to content myself with prescribing on the basis of the findings of the first examination. I corrected her astigmatism, ordering the glasses for both distant and near use, and advised her return in three months. I did not see her again for eighteen months, when she reported that she had worn the glasses constantly for two or three months, then, not having had any trouble since first commencing to wear them, she had discarded them entirely. For two months before the second visit her head had commenced to trouble her again, and as the trouble seemed to be increasing, she desired me to look at her eyes again. I found practically the same amount of astigmatism, but the axes had approached the vertical a full ten degrees in both eyes.

She was recorrected and urged to wear her glasses constantly, which she has done with entire relief from her symptoms. This condition will probably be maintained until the onset of presbyopia upsets her ocular equilibrium.

This case cannot be strictly classed as being influenced by the development of prespyopia, but it is a good illustration of the symptom being dependent upon the refractive error; its relief upon the correction of the latter, and the immunity continuing for several months without the aid of the lenses; and, lastly, the appearance of the vertigo and its final subsidence upon returning to and constant use of the glasses.

I have had a number of similar cases in women, but I call your attention particularly to the histories of the two men because they not only illustrate the class, but demonstrate the theory that men are as likely to be affected as women, but that they are more prone to ignore the influence of the eyes in producing such symptoms.

In conclusion I would say that I realize that the general practitioner should not be burdened with any unnecessary facts, and I have purposely avoided speaking of anything not germane to the particular subject selected, in order that the main proposition, viz., that vertigo could and often does arise from defective ocular conditions, might not be obscured.

Clinical Department.

"CONJUGAL" OR "INFECTIOUS" DIABETES.

BY ALBERT N. BLODGETT, M.D., BOSTON.

In the Gulstonian Lectures, delivered in London during the present season (March, 1905), by Dr. W. Cecil Bosanquet (reported in "The Lancet," April 8, 1905, p. 905), the lecturer quotes Schmitz (Berliner Klinischer Wochenschrift, 1890, p. 419), as follows: "Schmitz examined the records of 4,389 diabetic patients, and found only four married couples." Bosanquet adds, "From this it would appear that the disease is not communicated from one individual to another. General experience hardly bears out the contention that the malady is infectious." The sequential occurrence of diabetes in husband and wife is rare, as the remarks above quoted would indicate, comprising only one married couple among a thousand individual patients, though it is only fair to say that other observers have reported a higher frequency of conjugal cases of diabetes.

I would like to add a similar incidence in the marital relation, from my own records. I do not attempt to account for the invasion of the diabetic symptoms in these two patients, except to mention the fact that they had been married about thirty years, had always occupied the same room and bed and that they had never had children. The following is simply an outline of the clinical history of these two patients:

The husband, aged about fifty-two years at the time I first saw him professionally, had been under the care of an eminent practitioner in another city, together with five of his friends, for treatment on account of diabetes. This gentleman remained under my care continuously for the subsequent sixteen years. He was robust in appearance, rather full in flesh, though not obese, quite active in attending to his business affairs, which required him to travel about the country a good deal, and he retained the same appearance during the entire course of his disease. During all these years he conscientiously followed directions in regard to diet, physical exercise, indulgence in alcoholics, exposure, etc. He remained all this time in remarkably good health, conducting his affairs in the usual manner, occasionally making visits to Europe for business or pleasure. He retired from active commercial life about five years ago, but still kept up his regimen, walking long distances, and appearing to be in the best of vigor and health. In all this time his only intercurrent affection was a painful and protracted attack of herpes zoster, affecting the region supplied by the fifth, sixth and seventh spinal nerves of the right side. There was much neuralgic pain over the course of the implicated nerves, and the efflorescence remained in an active stage with considerable localized tenderness for a period of about six months. The efflorescence ultimately healed, leaving permanent cicatrices at the seat of each lesion. During the entire period of my observation of this case glucose was always present in the urine, usually in rather large amounts, averaging probably about 1%. Quantitative examinations were made occasionally, but often the specific gravity and degree of reaction to tests were used in estimating the amount of sugar. Several different tests were employed, but the result was uniformly corroborative. The patient remained strong and active, taking outdoor exercise and retaining his interest in all his pleasures until the time of his fatal attack. He died a few months ago, in consequence of a carbuncle on the back of the neck, followed by acetonuria, coma and death.

J. E., the wife of the former patient, was first seen professionally about fifteen years ago. She was a large woman, inclining to obesity, but usually very active. She had been uniformly well and strong all her life. Married about thirty years. No confinements, no miscarriages, usual children's diseases, otherwise no sicknesses of importance. At the time of my first visit patient complained chiefly of "hot

flushings," frequent "fever turns," alternating with chilly sensations, which were a source of much annoyance, and which she associated with "change of life." To these symptoms was added later copious sweating on any slight exertion, or as the result of any nervous excitement. Examination revealed nothing abnormal in chest or abdomen, especial attention being given to the heart; no valvular or other lesion could be detected. Treatment was not followed by relief and was abandoned. Three years later she complained of breathlessness on slight exertion, particularly when out of doors, and most distressing when she was in a strong wind. To the condition described, real attacks of suffocation subsequently were added, which caused her much suffering and apprehension. After a period of some months the patient began to experience paroxysms of intense pain in the left breast and shoulder, later extending to the left arm and fingers. These attacks became gradually more frequent and more distressing, and at length prevented her from attending to her ordinary affairs in her house and obliged her to suspend all her usual outdoor activities. At this time the urine was examined, and was found to contain a large amount of glucose. The patient was much opposed to medical treatment, and would not follow advice. Under these circumstances the attacks of breathlessness and angina became more pronounced. Glucose was invariably found to the extent of one half to one per cent in the urine. No conclusion could be reached as to the previous duration of this symptom. The appetite remained good, patient did not become emaciated, but was invalided chiefly on account of the breathlessness and accompanying angina. She ultimately died two years before her husband, during a severe recurrence of spasmodic pain in the chest, extending to the shoulders and back, as well as down both arms. At no time during her illness was acetone found in the urine, though coma was present for twenty-four hours before death occurred.

Medical Progress.

REPORT ON PROGRESS IN PATHOLOGY.

BY JOSEPH H. PRATT, A.M., M.D., BOSTON.

(Concluded from No. 10, p. 279.)

THE NUMBER OF BLOOD PLATELETS IN HEALTH AND DISEASE.

HELBER [3] used for preserving blood platelets a 10% solution of sodium metaphosphates as recommended by Pratt. Instead of determining the ratio of platelets to erythrocytes and calculating the number of platelets per cmm. from the known number of erythrocytes, Helber counted the plates directly by means of a Thoma-Zeiss apparatus, using a special counting chamber only 0.02 mm. deep. The ordinary counting chamber has a depth of 0.1 mm. The average number of platelets in twenty-five healthy men was 228,000 per cm.; the lowest count was 192,000, the highest 264,000; four times the number was below 200,000, and five times over 250,000. In a case of anemia due to bleeding ex utero in which the erythrocytes were reduced to two and a half millions he found the blood platelets numbered 276,000. In four cases of simple anemia there was a decided increase. The highest count was 510,000. Afanassiew, Riess and Fusari made similar observations. In two cases of pernicious anemia Helber found a diminution. In one case there were 91,000 to 108,000 platelets per cmm., in the other 177,000. In both the erythrocytes were less than two millions. Riess, von Emden and Determann likewise found a decrease in the number of platelets in pernicious anemia. In chlorosis the counts were normal or slightly increased. In a case of purpura hemorrhagica the platelets numbered at the time of the first examination only 40,000, the coagulation time was nine minutes. Later the platelets increased to 180,000 and the coagulation time fell to four minutes. This conclusively shows, in the author's opinion, that there is a relation between the number of platelets and the coagulation of the blood. In moderately advanced tuberculosis he found an increase in the platelets, amounting in one case to 420,000. In a case of subacute miliary tuberculosis complicated with sepsis the count reached 612,000 per cmm., shortly before death it sank to 180,000. In cancer of the stomach an increase was found amounting in one instance to 510,000. An increase was also noted in gangrene of the lung, spondylitis postyphosa and in multiple sclerosis complicated with cystitis and hypostasis of the lungs. Before death in chronic disease the platelets are reduced. In pneumonia the number of platelets falls during the febrile period and increases after the crisis. The same is true of typhoid fever. In erysipelas an increase was observed.

[3] Deutsches Archiv. für klinische Medisin, 1904, lxxxi, p. 316.

CEREBROSPINAL MENINGITIS.

Tooth [4] presented at the recent meeting of the British Medical Association an analysis of forty-five cases of meningitis which have been under observation at the St. Bartholomew's Hospital the past year. Twenty-two of the cases were tuberculous, two pneumococcic, three streptococcic, eleven "posterior basic," and seven unclassified purulent cases. Optic neuritis is common only in the tuberculous variety. Kernig's sign, muscular spasm, retraction of the head are almost invariable in "posterior basic," less frequent in the other forms.

Horder [5] states that in meningitis suppuration occurred most rapidly with pneumococci, less so with streptococci and meningococci. Both the pneumococcus and the meningococcus lead to the formation of an exudate in the posterior basic region.

Osler [6] calls attention to the fact that epidemics of cerebrospinal meningitis never become pandemic, they are always limited to certain districts or cities. Cerebrospinal meningitis must be regarded as one of the most fatal diseases of early life although from 30 to 50% of the cases recovered. Meningococci have been found on the nasal mucous membrane of 9% of healthy individuals. The portal of entry is probably the sphenoidal cells rather than the ethmoidal foramina. In a series of ninety-three cases of menin-

[4] Lancet, 1905, August 5.
[5] *Ibid.*
[6] *Ibid.*

gitis, thirty-five were tuberculous and thirty-two meningococcic. Purpura and sometimes arthritis characterize the meningococcic meningitis. Recovery occurred only in this variety of the disease. Of the thirty-two cases observed, seventeen got well, although blindness resulted in one case. The twenty-one pneumococcic cases, all the tuberculous and the streptococcic, and the mixed infections of tubercle bacilli and streptococci died. Lumbar puncture should be repeated when the tension of the cerebrospinal fluid is high.

DIFFERENCES IN THE PATHOLOGICAL HISTOLOGY OF TRAUMATIC AND SPONTANEOUS AORTIC ANEURISMS.

Asahi[7] reports the results of his histological study of healed tears of the aorta and "spontaneous" aortic aneurisms. The work was done under the direction of Chiari. Four cases of traumatic aneurisms resulting from tears of the aorta were examined microscopically and all of them showed an entirely different picture than that presented by ordinary aneurisms. Severe productive mesaortitis which Heller has shown to be syphilitic in origin was found demonstrable in all the cases of spontaneous aneurisms and in none of the cases of traumatic aneurisms. This investigation furnishes additional evidence of the importance of syphilis in the etiology of aneurisms.

THE INFLUENCE OF SUPRARENAL EXTRACT UPON ABSORPTION AND TRANSUDATION.

Meltzer and Auer[8] found that adrenalin delayed and diminished in frogs the toxic action of strychnine. No support was furnished by their experiments for the hypothesis that the diminution of the poisonous effect of strychnine was due to a biochemical interaction. The large doses of adrenalin necessary to produce the retarding action had a pronounced paralyzing effect on the nervous system which might neutralize somewhat the effects of strychnine, thereby delaying the onset of tetanus. This explanation, however, was overthrown by injecting adrenalin in one lymph sac (dorsal or ventral) and strychnine into the other lymph sac of the animal. There was no delay in the toxic action, although the prostration of the animal was marked. In order to secure the diminution of toxic effect it was always necessary that the adrenalin and strychnine should be mixed before injection, or else introduced into the same lymph sac.

It is well known that local application of adrenalin produces a constriction of blood vessels leading to a blanching of the tissues. It might be that the power of absorption of the contracted vessels is diminished. Exner has recently shown that the injection of adrenalin into the peritoneal cavity retards the absorption of strychnine and other drugs by the peritoneum.

The mitigation of the effects of strychnine was more marked when the adrenalin was introduced directly into the veins than when injected into the peritoneal sac or subcutaneous tissue. This was to be expected if the adrenalin acts by impairing the power of the tissues with which it is in direct contact, as in that case its own action would prevent its complete absorption.

Meltzer and Auer found by experiments upon rabbits that an intravenous injection of a comparatively moderate dose of adrenalin either entirely overcame or greatly diminished and delayed the effects of a fatal dose of strychnine. It could not be denied that the prostrating effect of adrenalin diminished somewhat the toxic effect of strychnine, and that the prostration due to adrenalin was lessened by strychnine. Although the evidence was clear that the delaying influence of adrenalin was due essentially to its influence on absorption and not to a neutralization of the action of strychnine on the spinal cord, it was thought advisable to select a substance which gives characteristic signs, but is otherwise inert. Fluorescein was the substance selected. It stains the fluids and tissues of the body yellow, but is harmless. Subcutaneous injection of a large dose of adrenalin retarded and diminished the coloring of skin and mucous membranes produced by a subsequent subcutaneous injection of fluorescein. The retardation was much stronger when the adrenalin was injected intravenously. After absorption of a substance into the blood, it must be transuded into the lymph and taken up by the different tissue cells before it can exert its action upon these cells. The retardation of the action of strychnine and fluorescein by adrenalin might not be due to interference with absorption, but to a disturbance in the lymph secretion or to increased elimination from the blood.

The writers undertook several series of experiments to elucidate these points. They found that suprarenal extract retards absorption from the blood into the tissues. It affects the capillaries in such a manner that the passage of fluid through their walls in either direction is impaired. Meltzer and Auer advance the theory that suprarenal extract produces a decrease in the permeability of the endothelial wall which leads to a retardation of absorption and transudation.

The endothelia, like all organized matter, have pores and possess the properties of irritability and contractibility. Suprarenal extract increases the tonicity of the contractile protoplasm of the endothelial cells of the blood capillaries and lymphatics. This increase in tonicity narrows the lumen of the pores of the endothelial cells and hence renders the interchange between the blood and the tissue fluid less easy.

TESTS FOR OCCULT BLOOD.

Steele[9] gives the following directions for detecting traces of blood in fæces. If the stools are not semi-liquid they must be made so by thoroughly mixing them with distilled water. Five grams of fæcal material should be used for

[7] Zeitschrift für Heilkunde, 1905, xxvi, Abt. f. path. Anat., p. 163.
[8] Transactions of the Association of American Physicians, 1904, xix, p. 207.
[9] American Journal of the Medical Sciences, 1905, July.

each test. This amount is mixed thoroughly with at least an equal quantity of ether. The ether extracts the fats, which produce a thick emulsion with acetic acid and ether if not removed. Let the mixture stand fifteen minutes or longer, then pour off the supernatant fluid and treat the fæcal residue with one third of its volume of glacial acetic acid and ten cc. of ether. The mixture is then thoroughly shaken and allowed to stand for at least fifteen minutes, when the ethereal extract will rise to the top in a clear layer. The solution of aloin is made by dissolving as much aloin as will go on the end of a spatula in one third of a test tube of 70% alcohol. Two to three cc. of the clear yellow aloin solution are mixed in a test tube with about the same amount of the ethereal acetic-acid extract of the fæces. Two to three cc. of ozonized turpentine are then added and the whole gently shaken. If blood is present a cherry-red color forms. Not more than fifteen minutes should be allowed for the red color to appear, as after this time the aloin solution will turn red if blood is not present. Hydrogen peroxide cannot be used as a substitute for turpentine in the aloin test. Ozonized oil of turpentine should be prepared by allowing pure oil of turpentine, as that of Merck, to stand exposed to the air for at least three weeks.

If the guiac test is used, a solution of guiac is made by shaking a grain of gum guiac in one half a test of ether and allowing it to stand until clear. Two cc. of this guiac solution are mixed with two cc. of the acidified ether extract of the fæces and at least an equal amount of hydrogen peroxide is added and the whole shaken. If positive a blue color forms in the supernatant fluid.

THE PATHOLOGICAL ANATOMY OF EXOPHTHALMIC GOITRE.

W. MacCallum [10] has examined the thyroid in twenty-eight cases of exophthalmic goitre. Characteristic changes were observed in the form and size of the alveoli, the character of epithelial cells, the character of the colloid, the vascular supply, the connective-tissue framework, the lymphoid structures. The epithelium of the alveoli was markedly folded giving the appearance of diverticula. New alveoli were present, sometimes in large numbers. The epithelium was changed from the flat or cubical to the high cylindrical form. The colloid was diminished in amount. The veins were large and distended with blood. Friability of their walls was noted. There was an increase in the lymphoid nodules in the interstitial tissue. The parathyroid glands were examined in nine cases and found to be normal. The whole anatomical picture in the thyroid resembles a compensatory hypertrophy.

THE number of deaths from tuberculosis in England is 60,000 a year, according to *American Medicine*, yet it is said there are only 70 sanatoriums, with room for 2,760 patients.

[10] Johns Hopkins Hospital Bulletin, 1905, August, p. 287.

Reports of Societies.

AMERICAN SURGICAL ASSOCIATION.

TWENTY-SIXTH annual meeting, held at San Francisco, Cal., July 5, 6 and 7, 1905, under the presidency of DR. GEORGE BEN JOHNSTON, of Richmond, Va.

After a brief executive session, DR. EMMET RIXFORD of San Francisco, first vice-president, took the chair, and President JOHNSTON delivered his address.

JOHN PETER METTAUER.

He selected for his subject "John Peter Mettauer," saying that little was known of his childhood and youth beyond the fact that, raised in an atmosphere of surgery, he imbibed a love for this profession and early determined to adopt it as his life's work. He was born in 1787. Mettauer's medical education was carried on under the most favorable conditions obtainable in America at that time. For a period of about forty years the number of surgical patients who gathered to Mettauer for treatment was sufficient to keep him constantly with from forty-five to sixty cases under his care. Often it was true that about every good house in the community sheltered some person who was convalescing or awaiting his turn for operation. The speaker had heard his operations for cataract put in number far beyond the 800 that could be accounted for. Dudley's great record in cutting for stone 225 times in a practice of forty years must yield to Mettauer's total of 400 operations, and the number of strictures relieved was commonly put at something over 200. Three operations were recalled, performed in the last week of his life, when at the age of eighty-eight his eyes were yet keen enough and his hands steady enough for him to make a successful operation for cataract, for stone, and for amputation of the breast. But Mettauer's most brilliant work in the way of operations was his method with vesico-vaginal fistula and his successful employment of wire sutures made of lead, in which he antedated by a good many years even Sims, whose name was generally associated with this operation. So successful was Mettauer that he declared his belief that every case of this sort was curable by his method, and, so far as his efforts were reported, the speaker was not aware that he ever failed in one. Proper pride and regard for his own reputation in the coming years must make every surgeon careful to a degree in assigning credit for useful and honorable achievements to those who had preceded him, and there was in the history of surgery no claim more clear and unmistakable than that of John Peter Mettauer to the honor of discovery in this case, and he was plainly entitled to rank in medical history and in the grateful memory of his successors in the same class with McDowell and Dudley and Sims and Mott. Mettauer's first reference to the operation of vesico-vaginal fistula appeared in the BOSTON MEDICAL AND SURGICAL JOURNAL, Vol. 22, p. 154, twelve years before Sims' communication, and it clearly outlined the operation which ought always to be associated with his name. Mettauer was decidedly of the opinion that every case of vesico-vaginal fistula could be cured, and his success justified the statement.

Reference was made to the eccentricities of Mettauer, and among them was his invariable custom to wear on all occasions and at all times a preposterously tall hat. One of his children now surviving had told the speaker that she never saw her father without his hat on. He never attended service in the churches, and the explanation was always assumed to lie in the unwillingness either to remove the covering from his head, or to attend church wearing his hat. He would

decline to take off his hat in court on the occasions when his expert testimony was sought, and the sole occasion on which a judge seems to have insisted that the doctor should be uncovered brought from Mettauer the suggestion that if his evidence was essential to the cause, he would be pleased to give it with his hat on, and that if it were not so, he would be quite as well pleased to leave the court-room, meanwhile, of course, wearing his hat.

Dr. Johnston said that so great was his interest in seeing full justice done to the genius of Mettauer that he was seriously contemplating some extended work in the way of a biography.

END RESULTS IN SURGERY OF THE KIDNEYS WITH REPORT OF NINETY CASES AND ONE HUNDRED AND TWENTY-THREE OPERATIONS.

Dr. Albert Vander Veer of Albany, N. Y., read a paper on this subject, which was based on a review of 90 cases occurring in his own practice. The next largest group was composed of movable or floating kidney. These numbered 23 cases, exclusive of those where excision of the capsule for neuralgia, examination for stone, and decapsulation for Bright's disease was done. Nineteen of these cases occurred in the female, about two thirds of whom were married, the lesion being on the right side. There were 4 males, the lesion also occurring on the right side, and the entire number recovering. One required removal of the kidney four years after for abscess of the pelvis and stone; good recovery.

He next presented a series of 24 cases of nephrotomies, in which there was a surgical lesion of the kidney, grouped under the heading of pyelitis, pyonephrosis, pyonephritis, or ascending pyelonephrosis. The series was divided as follows: male, right side, 2 recovered, 1 died. Male, left side, 6 recovered.

Nine of these cases finally required nephrectomy, 1 of the latter resulting in death. Of the remaining 15 cases, all made good recoveries, but 1 of them, after a period of four years, had a slight sinus, not deep, no pus, patient in excellent condition; the other patient recovered from the kidney complication, but developed a pelvic abscess, which was still draining and she was gradually losing ground.

In the cases of nephrectomies for hydronephrosis there were 8, as follows: Male, right side, 2 recovered. Female, right side, 3 recovered. Female, left side, 2 recovered, 1 died.

Regarding the removal of the kidney by the transperitoneal incision, the author stated that it was an exceedingly easy and convenient way of removing a large cyst or tumor, the patients doing nicely afterwards. Of these, there were 4 cases.

He then cited 2 cases of hydronephrosis in young women who were entirely cured by simple aspiration.

Of nephrotomies, followed later by nephrectomies, there were 9 cases, as follows: Male, right side, 2 recovered. Male, left side, 1 recovered. Female, right side, 3 recovered. Female, left side, 3 recovered. All of these cases made a good recovery from the two operations, with the exception of two patients, one dying a few months after from multiple abscesses of remaining kidney, and the other, still alive, was gradually failing in strength.

The author was greatly impressed with the study of tuberculosis of the kidney, as to whether the invasion occurred from below or from systemic infection. There were 7 of these cases, as follows: Male, right side, 1 recovered. Male, left side, 2 recovered. Female, right side, 1 recovered. Female, left side, 3 recovered. There was a total of 8 cases of malignant growths in connection with the kidney, as follows: Sarcoma, male, right side, 2 recovered, 1 died. Male, left side, 1 died. Female, right side, 1 recovered. Female, left side, 1 died. Carcinoma, female, right side, 1 recovered, but died later from return of the disease. Hypernephroma, male, left side, 1 recovered.

Of decapsulation of the kidney for nephritis, there were 2 cases that recovered; results excellent.

Of traumatisms and injuries of the kidney, there were 6 cases.

Of cases of renal neuralgia, associated with suspected stone of the kidney, the author was not able to confirm his diagnosis by exposure of the organ. The entire group was made up of 6 patients, and in only one instance was the diagnosis confirmed by needling of the kidney.

The author then reported some irregular cases, and concluded his paper by reporting two cases of abdominal surgery which illustrated errors in diagnosis, in which the real trouble was with the kidney.

In a review of the cases presented in this paper, one was impressed with the very excellent results following the operation of fixation of the kidney. In the hands of all operators the mortality list was exceedingly small. Wearing of a bandage, with kidney pad, was exceedingly irksome to many patients who gladly consented to surgical intervention, when the prospects for recovery were so good.

The combined operation of nephrotomy and nephrectomy later for abscess of the kidney was appropriate for such cases as would not bear too long an operation, and where there might be a large kidney, made up of multiple abscesses in such a way as to make manipulation of the organ quite difficult. Simple drainage benefited the patient for a time, often causing a diminution of the mass to be removed later. In the purely cystic form of kidney, a true pyonephrosis, an immediate nephrectomy was proper in the majority of cases. Following a nephrotomy or nephrostomy, a very fair number of cases recovered without further intervention. In a large pus kidney there was always some danger in a nephrectomy causing an infective peritonitis. In traumatisms of the kidney firmness and decision on the part of the surgeon were an absolute necessity. There were no other forms of emergency surgery more exacting. In cases of movable or floating kidney, giving such marked symptoms that the surgeon was often led to believe that he had a stone to deal with, the speaker admitted that our diagnoses were very far from correct, and the cases here reported were disappointing by reason of not finding a calculus present. It was sometimes difficult to diagnose between a neuralgic kidney and one containing a calculus in its pelvis. Splitting of the capsule relieved pain in cases that could only be classified as a neuralgic condition. It was yet a mooted question as to how much could be accomplished by resection of the kidney for relief of abscesses and growths. The cases of tuberculosis reported manifested decidedly the importance of an early operation, and gave a most encouraging outlook for these patients regarding permanent recovery. Malignant growths gave our mortality list, and yet there was much hope for these cases if reached early. Surgery of the kidney was becoming more and more exact with the splendid advances made in methods of examination of the urine, etc. Errors of diagnosis would occur less frequently in the practice of abdominal surgeons as methods of examination became more perfect.

The writer was impressed with the oblique incision, which had been employed in nearly all of his cases during the past ten years. The one case of hernia reported resulted from the old incision, parallel with the spine and transversely through the muscle, causing a lumbar hernia, but none of the others presented this complication.

It will be observed that in a total of about 90 patients there were 123 operations done. This was readily accounted for because of the patients requiring more than one operation. The rate of mortality was exceedingly small, malignant disease and abscesses of the kidney being alone responsible.

DR. WILLIAM J. MAYO of Rochester, Minn., asked the essayist whether he took out the ureter or considered it necessary to remove it in cases of tuberculosis of the kidney. Also, whether any of the cases in which nephrotomy for tuberculosis of the kidney was performed had been followed by permanently good results. Recently he had gone over the histories of some thirty-six nephrectomies for tuberculosis of the kidney, and had found that a large number of people who were supposed to have tuberculosis of both kidneys in the early stage had only one kidney involved. Careful examination had shown in the majority of these cases, according to his recent experience, that the tuberculosis was confined to one kidney. He thought a large majority of cases of tuberculosis of the kidney were one-sided to start with; that his experience, as furnished largely from post-mortem examinations, was that the second kidney became involved at the time of death, and that therefore he had post-mortem rather than living evidence of the fact that in the early stages the percentage of cases in which tuberculosis of the kidney was bilateral was small.

DR. N. B. CARSON of St. Louis mentioned a case in which a diagnosis of floating kidney was made by several good surgeons, and he operated with the intention of fixing the kidney. He found the kidney slightly movable, but not floating. Later an eminent surgeon said the case was undoubtedly one of floating kidney, even after the operation had been done. The speaker told this surgeon that he had already fixed the kidney. Later he operated again, and, instead of a floating kidney, found a floating right lobe of the liver. The gall bladder was enlarged to the size of a kidney. This was fixed to the liver. It contained a number of stones. The right lobe of the liver was so freely movable that the gall bladder could be floated, so to speak, all over the abdomen, and it so corresponded to the shape of the kidney that every one who examined the patient made a mistake. The floating kidney was removed, and patient made a good recovery.

DR. ARCHIBALD MACLAREN of Minnesota mentioned the ease with which a kidney could be removed after resection of the twelfth rib. He got this idea from Dr. Mayo. He had tried this in a recent case and found he could do the operation much easier by resecting the twelfth rib, although he opened the pleura. The opening in the pleura could be easily plugged with iodoform gauze.

DR. VANDER VEER, in closing the discussion, said, in reply to Dr. Mayo, that the tuberculosis was confined to one kidney in his cases, and he had no record of bilateral kidney tuberculosis. In regard to the removal of the ureter, in the first case he operated upon he did not remove the ureter, and in one case he had to do a secondary operation on account of relapse. In regard to Dr. Carson's case, he had seen almost a duplicate of it, in that there was a sarcoma which involved the gall bladder and right lobe of the liver.

NON-PARASITIC CYSTS OF THE SPLEEN.

DR. CHARLES A. POWERS of Denver, Col., in a paper with this title stated that this subject had a twofold origin. *First*, the few and comparatively recent clinical reports; *second*, the somewhat more numerous accidental post-mortem findings. In September, 1895, a young man of eighteen was referred to him who presented a large, right-sided, abdominal cyst. The mass was of four years' growth. There had been a gradual loss of flesh and strength, anorexia, headache and general pressure symptoms. Fluctuation was plain. The diagnosis of splenic cyst seemed positive. A free incision was made over the prominent part of the tumor, the walls of which were found to be about one half of an inch thick, semi-cartilaginous and solidly inherent to all the adjacent structures. Extirpation seemed impossible. Later autopsy findings confirmed this. The single cyst held several liters. A posterior incision was made, with through drainage. The walls of the cyst did not collapse and the patient died of septic absorption from the cyst wall on the twelfth day. The anatomical diagnosis was hemorrhagic cyst of the spleen. From the autopsy findings the author could not see how the cyst could have been successfully extirpated.

He presented a brief analysis of thirty-two tabulated cases.

In considering the treatment he spoke of puncture, incision and injection, incision and drainage, marsupialization, resection of cyst, and splenectomy.

(*To be continued.*)

Recent Literature.

Practical Dietetics, with Special Reference to Diet in Disease. By W. GILMAN THOMPSON, M.D., Professor of Medicine in the Cornell University Medical College in New York City, Visiting Physician to the Presbyterian and Bellevue Hospitals. Third edition, enlarged and thoroughly revised. New York and London: D. Appleton & Co. 1905.

Thompson's Dietetics is so well known to the medical public that a new edition calls for little attention from the reviewer. The character of the work remains the same, but many pages show evidences of revision.

Manual of Materia Medica and Pharmacy. Specially designed for the use of Practitioners and Medical, Pharmaceutical, Dental and Veterinary Students. By E. STANTON MUIR, PH.G., V.M.D., Instructor in Comparative Materia Medica and Pharmacy in the University of Pennsylvania. Third edition, revised and enlarged. Crown octavo, pp. 192. Interleaved throughout. Philadelphia, Pa.: F. A. Davis Company. 1905.

The author states that the work "is intended to give to practitioners and students of medicine, in as concise a manner as possible, those points which are of value, without the lengthy detail usually found in textbooks"; a purpose which has been successfully accomplished. Only the more common and valuable drugs are considered. The book comprises a list of botanical and therapeutic terms used in medicine, a consideration of drugs, alphabetically arranged, and a section on pharmacy.

The arrangement is excellent, readily enabling the reader to find any subject in question. The short accounts of individual drugs are well chosen. A special feature of the work is the dosage of drugs for the lower animals as well as for man.

THE BOSTON

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INVESTIGATION OF ACUTE RESPIRATORY DISEASES IN NEW YORK.

THE medical commission of the New York Health Department for the investigation of acute respiratory diseases, which was appointed in August, 1904, and began its work in October last, made public its first report on Sept. 7. The president of the commission is Dr. E. G. Janeway of New York, and among its members are Drs. Theobald Smith of Boston, Wm. H. Welch of Baltimore, J. H. Musser of Philadelphia, Frank Billings of Chicago, and Drs. Thomas Darlington (Health Commissioner), H. M. Briggs and F. P. Kinnicutt of New York. The commission obtained the co-operation in special researches of Drs. W. T. Longcope of Philadelphia, C. W. Duval of Boston, and Wm. H. Park, Leo Burger and J. C. Wood of New York, and the direction and organization of the work was placed in the hands of Prof. Philip H. Hiss of the medical department of Columbia University.

Among the objects in view were to study the occurrence and virulence of the pneumococcus and organisms related to or resembling it in the human mouth in health and disease; to collect evidence of variations in the virulence of such organisms; to investigate the occurrence of the pneumococcus in children's hospitals, homes and asylums, with a study of the bacteria of the upper air-passages before and after outbreaks of pneumonia; to consider the vitality of the pneumococcus under various conditions and to make a study of mouth disinfection and other prophylactic measures.

The report points out that while in the last twenty years the general death-rate in New York City has decreased 20%, the death-rate from acute respiratory diseases (pneumonia, influenza, etc.) has increased more than 100%. In the first half of the year 1904 there was an extraordinary increase in the mortality from these diseases, which amounted to 25% of the total deaths in the city. The conclusion is reached that such diseases are essentially communicable and that, however great the inherent difficulties of the subject may be, theoretically, at least, they should be to a greater or less extent preventable. The Board of Health, looking forward to the study of this problem in the revision of the Sanitary Code made in 1903, included this group of diseases in the class in which partly voluntary and partly compulsory notification was required. This provision of the code, however, has not yet been enforced, and it is believed that provisions for this should now be made. One of the great difficulties in the way of prevention arises from the fact that pneumococci are present to a very large extent in the respiratory passages of healthy persons, and on this subject Dr. Hiss makes a special report. It seems highly probable, he says, that practically every individual, at least during the winter season, when exposed to environmental conditions such as exist in New York City, acts as the host at some time or other, and probably repeatedly, of organisms of the true pneumococcus type. Little difference was found in the virulence of pneumococci obtained from pneumonia patients and those obtained from the mouths of healthy persons. In two instances the appearance of the micro-organisms in the mouths of persons hitherto free from them was coincident with "catching cold," but this is no doubt exceptional rather than the rule. The largest percentage of pneumococci from the mouths of healthy persons was obtained from foundling hospital children, the next from medical students at Bellevue Hospital, the third from persons in the country around New York, and the smallest of all from those living in the Adirondack Mountains. The workers in the laboratory of the Boston City Hospital found these organisms not only in the mouths and expectoration of pneumonia patients, but in abscesses, cerebrospinal fluid, sputum from bronchitis and suspected tuberculosis, pleural exudates, and in the mouths of every one of twenty-four healthy persons working in the laboratory and hospital.

In order to determine whether the pneumo-

coccus is a permanent resident of the mouth or whether the continued finding of it indicates repeated re-infections, an inquiry is now under way at the New York quarantine station, where the mouths of sailors arriving from sea voyages are being examined to see whether, after long residence in uninfected air, away from the possibility of outside infection, they are free from pneumococci. Other organisms have been found in the mouths both of pneumonia patients and healthy persons which so closely resemble the pneumococcus that they can only be distinguished from the latter by special and complicated tests.

Dr. Wood, after discussing the methods by which the pneumococcus may reach the lungs, states as the result of his investigations, that the life of the micro-organism is of considerable duration, the average period being less than two weeks, unless the material is exposed to direct sunlight, when it is much less. But as such sputum does not give off bacteria, even when exposed to strong currents of air, it may be considered as innocuous, except to persons handling clothes, bedding, etc. Under ordinary conditions the sputum dries in a few hours or days, but the dried masses retain their virulence for a long time, and if deposited on the floor or bedding may be powdered mechanically, so that sweeping, dusting or brushing the contaminated articles will distribute preumococci in the air. Fortunately, however, the organisms in the sputum do not remain long in suspension, and die off rapidly under the action of light and desiccation. In sunlight or diffuse daylight the bacteria in such powder die within an hour and, if kept in the dark, in about four hours. The danger from powdered sputum may therefore be avoided by ample illumination and ventilation of the sick room, in order to destroy or dilute the bacteria, and by the avoidance of dry sweeping or dusting. Articles which may be contaminated and which cannot be cleaned by cloths dampened in a suitable disinfectant should be removed from the patient's vicinity.

Dr. Longcope, who studied the growth of the pneumococcus in the blood serum of man and various animals, found that under certain conditions there makes its appearance in the blood serum some substance, the exact nature of which has not as yet been determined, from which the pneumococcus is capable of forming large quantities of acid. This substance is present with great constancy and in large amount during attacks of pneumonia, but seems to disappear rapidly after the crisis is passed. It may be present in a number of other conditions, as general streptococcic and gonococcic infections, acute articular rheumatism, and, in comparatively small amount, in chronic nephritis and uremia. So far as present observations go, it has not been demonstrated in cases of pulmonary tuberculosis, nor in the blood of healthy persons or horse or beef blood. Traces of it are found, however, in calf and rabbit blood serum.

An attempt was made to develop a serum which might be used either to prevent pneumonia or to assist in ridding the system of the germs after the disease had been contracted. In the experiments made it was found that all pneumococci were agglutinated by means of pneumococcus immune serum. An immune pneumococcus serum was found capable of agglutinating various pyogenic streptococci, certain atypical organisms, and several strains of the streptococcus mucosus capsulatus. The serum of pneumonia patients varied in its power to agglutinate different pneumococci, some strains being agglutinated by it, and others not. Dr. Park reports that by repeated inoculations into a sheep of a pneumococcus strain a specific protective power of this serum for mice may be developed against the homologous strain and against certain other strains. He is of the opinion that cases of pneumonia should be considered to a certain degree contagious, and, since the virulence of the pneumococcus may be quickly increased, and since the organism is very prevalent in normal sputum, that all possible means should be taken to restrict expectoration in public places.

THE MUNICH CLINIC OF NEUROLOGY AND PSYCHIATRY.

PROGRESSIVE as Germany has been in the development of many branches of medicine, there are few in which she has shown a more enlightened spirit than in the prosecution of the study of diseases of the mind. For many years psychiatry has been recognized as an integral part of medical education and not merely as a subject which is to be tolerated and not encouraged. Clinics in mental disease have for years been held at many of the large hospitals, certainly without detriment to other patients and to the great benefit of students. We have before us a letter from Dr. Stewart Paton, published in the current number of *Science*, relating to the new university clinic in Munich for nervous

and mental disease. The extraordinary progress which has been made in the study of psychiatry reaches a certain material culmination in the construction of this modern hospital. The result attained represents an experience extending over a great many years, and further increased by the construction of twenty-two similar hospitals throughout the German Empire, a melancholy contrast, as Dr. Paton points out, to English-speaking countries, where not a single such hospital exists.

The clinic is erected on land given by the city and is in close proximity to the other buildings forming the medical department of the university. The new hospital affords accommodations for one hundred and ten bed patients, and no money has been wasted merely in architectural effects. In addition to the wards, the building contains an amphitheatre capable of seating two hundred and forty students, and many rooms planned for the various types of scientific work which the hospital is designed to foster. The staff consists of six resident and two non-resident members, and is under the general direction of the university professor of psychiatry whose word regarding the admission and discharge of patients is final.

One of the most striking features of a visit to the wards is the entire absence of all signs popularly supposed to be essential to the treatment of the insane. Baths have taken the place of restraint, and absolutely no form of mechanical control is used. Arrangements for continuous baths, of a special type of construction, have made this possible. Naturally, the details of administration have been developed to the last point of refinement so that the work of teaching and the work of nursing are both rendered as simple as the use of the most modern devices permits. The laboratories are fully equipped, and this element of the clinic is naturally given a prominent place.

It has for a number of years been perfectly clear to those who have watched the trend of events in medicine that psychiatry is one of the subjects which in the immediate future is destined to absorb much of the attention of the best minds in the profession. By this we do not, of course, mean that more men will enter upon the administrative side of the problem, but that the medical profession at large will come to realize how deeply interwoven into all branches of medical science are the problems which psychiatry especially offers for solution. It is clear that the science of psychiatry leads far beyond the investigation of the diseased mind and allies itself with many of the more pressing social questions of the time. It seems almost incredible that with the resources at our disposal in the way of money this country should be so backward in the development of a department of medicine which offers here somewhat unique possibilities for study. We are confident that, following as we have in so many respects the leadership of Germany, we shall not much longer delay in developing what the new Munich clinic represents, namely, an enlightened attitude toward the significance of psychiatry in the medical curriculum.

THE OPENING OF THE SCHOOLS.

Certain of our English contemporaries have adopted the excellent custom of devoting one of their early fall issues to a consideration of matters relating to medical education and the medical profession in general. To those about entering upon the study of medicine, as well as to others later in the course, and to those just beginning practice, this number of the various journals must prove of very great value, both as directing their future course and as pointing out the difficulties, pitfalls and rewards of the profession. The *British Medical Journal* for Sept. 2, which is announced as the "Educational Number," gives its entire space, as does also the *Lancet*, to comment and information upon medicine and medical schools. Although the editorial remarks may hardly be termed original, they nevertheless bring again before the aspirant for a medical training the facts which his older confrères have many times experienced. However platitudinous many of the comments may appear to those who have been long in practice and known the rewards and disappointments of their profession, no doubt the younger men will find therein much food for reflection. It is certainly desirable that young men should realize early that to practise medicine successfully requires a very definite fitness both of mind and body; that the period of waiting is usually long; that the remuneration is small and often inadequate, and that many must fall by the wayside in the struggle, particularly in the large cities. On the other hand it is desirable that the compensations should likewise be emphasized. All this the *British Medical Journal* and the *Lancet* have done for us again, as they have many times in the past, and we commend to our readers the general conclusions which they reach.

MEDICAL NOTES.

A MEMORIAL TO PROFESSOR VON ESMARCH. — A memorial to Professor von Esmarch has recently been erected at Tönningen in Schleswig-Holstein. The unveiling took place on Aug. 6, and on this occasion Professor von Esmarch was present.

CHOLERA IN GERMANY. — The cholera situation in Germany is such that active measures have been taken to prevent its spread. A recent report from Berlin showed a total of 123 cases and 39 deaths. The physicians are being well supplemented by the populace in attempting to eradicate the disease. Placards, sanitary leaflets and cautions are being widely circulated and the vigilance which has been exercised has in general had a reassuring effect.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, Sept. 13, 1905, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 11, scarlatina 14, typhoid fever 48, measles 9, tuberculosis 36, smallpox 0.

The death-rate of the reported deaths for the week ending Sept. 13, 1905, was 16.36.

BOSTON MORTALITY STATISTICS. — The total number of deaths reported to the Board of Health for the week ending Saturday, Sept. 9, 1905, is 200, against 192 the corresponding week of last year, showing an increase of 8 deaths, and making the death-rate for the week 16.60. Of this number 108 were males and 92 were females; 199 were white and 1 colored; 134 were born in the United States, 63 in foreign countries, and 3 unknown; 36 were of American parentage, 136 of foreign parentage, and 28 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 16 cases and 1 death; scarlatina, 12 cases and no deaths; typhoid fever, 44 cases and 1 death; measles, 5 cases and no deaths; tuberculosis, 37 cases and 22 deaths; smallpox, no cases and no deaths. The deaths from pneumonia were 11, whooping cough, 0, heart disease 20, bronchitis 2, and marasmus 9. There were 8 deaths from violent causes. The number of children who died under one year was 62; the number under five years, 72. The number of persons who died over sixty years of age was 37. The deaths in public institutions were 57.

No deaths nor cases of cerebrospinal meningitis during the week.

AWARD OF DALTON PRIZE. — Dr. A. H. Wentworth of Boston has been awarded the Dalton prize by the Massachusetts General Hospital for a paper entitled, "A Study of the Metabolism of Atrophic Infants and Children."

NEW YORK.

BULLET IN THE APPENDIX. — In the case of Robert A. Pope of Newburyport, Mass., who was recently operated on at St. Luke's Hospital for recurrent appendicitis, there was found lodged in the appendix a 22-calibre bullet which had been in the patient's body for thirteen years. He had accidentally shot himself thirteen years ago, but it was not until lately that the ball had given rise to any inconvenience.

CONTAMINATION OF WATER. — At a meeting of the State Water Commission held in New York on September 7, a report was presented by a committee of which Dr. Ernest Lederle is chairman to the effect that they had made an investigation of alleged contamination of the Croton watershed at Mount Kigeo, Westchester County, and had found nuisances existing there such as to justify the interference of the health authorities. The committee was instructed to bring these nuisances to the attention of the State Board of Health and report back the action of the department in the matter.

MORTALITY DURING AUGUST. — The weekly reports of the Health Department show that the mortality in the city during the month of August represented an annual death-rate of 17.88, as against 23.27 in July and 18.14 in August, 1904. The corrected death-rate, excluding non-residents and infants under one week old, was 16.85. Among the diseases in which there was a decreased fatality were the following: The weekly average of deaths from diphtheria and croup declined from 21.5 in July to 18 in August; the weekly average from scarlet fever, from 3 to 1.75; from measles, from 15 to 7.75; from cerebrospinal meningitis, from 22.75 to 15; from bronchopneumonia, from 56.25 to 48; from cancer, from 61 to 51.5; from Bright's disease and nephritis, from 100.75 to 98; from organic heart diseases, from 82.25 to 80.5; from sunstroke, from 56 to 1.75; from diarrheal diseases, from 305.25 to 296.25; and from diarrheals, under two years of age, from 481.75 to 279.25. Among the diseases which showed an increased mortality were the following: The weekly average of deaths from whooping-cough increased from 11.75 to 13.5; from typhoid fever,

from 17 to 23.25; from pneumonia, from 40.75 to 49.75; and from pulmonary tuberculosis, from 148.5 to 150.5. During the month two deaths were reported from epidemic influenza and one from smallpox.

Quarterly Report of Bureau of Records.— The condensed quarterly report of the Bureau of Records of the Health Department, recently issued, shows that during the first quarter of the year (ending March 31) the mortality in the city represented an annual death-rate of 22.58 as against 20.22 for the corresponding quarter of 1904. The corrected death-rates were respectively 21.60 and 19.25. The total number of deaths in the quarter was 19,672, and the average number of deaths, corrected to correspond with increase of population, for the preceding quinquennium was 20,926, a decrease of 1,254 deaths, distributed at different ages as follows: Under five years, 679; between five and sixty-five years, 459; at sixty-five years and over, 116. The number of deaths from the following diseases showed the diseases specified when compared with the average number, corrected for increase of population, for the preceding five years: Typhoid fever, 17; malarial fever, 15; smallpox, 41; measles, 159; scarlet fever, 101; whooping cough, 37; diphtheria and croup, 186; influenza, 155; pulmonary tuberculosis, 131; other tuberculous diseases, 86; apoplexy, 103; heart diseases, 34; acute respiratory diseases, 978; Bright's disease and nephritis, 84; old age, 132. Carrying out the comparison, the following diseases showed increases, as follows: Meningitis, including cerebrospinal meningitis, 566; cancer, 16; violence, 60. The births reported for the quarter increased 1,283 over the corrected average for the previous quinquennium.

Miscellany.

GONORRHEAL OPHTHALMIA.

The following directions for making smears in suspected cases of gonorrheal ophthalmia have been issued by the Bacteriological Laboratory of the Boston Health Department:

The outfit contains two glass slides, two sterilized wire loops, in envelopes; a card to be filled out by the physician; and these directions:

1. Use a separate outfit for each patient; and a separate wire loop for each eye of each patient, to avoid chance of infection from eye to eye.

2. The fingers of the operator should be carefully disinfected.

3. Place a small drop of water on one of the slides at the end away from the label.

4. Draw down the lower lid of one eye and insert a loop (first bending the wire to a convenient angle) flatwise between the lid and eyeball.

5. Pass the loop sidewise along the inner surface of the lid to secure a drop of any matter which may be present.

6. Rinse the loop in the drop of water and spread the drop out thin. Sometimes more material may be found under the upper lid. A similar operation to the above will secure this also.

7. Return the used loop to the envelope from which it came.

8. Disinfect the fingers carefully, then use the second, and, as yet, uninfected loop, to prepare a smear as above from the second eye. Return the second loop to its own envelope.

9. Write the patient's name and the eye examined (right or left) on the slide labels.

10. Allow the smears to dry; gentle heat may be applied to hasten the process. When thoroughly dry, place the slides together, back to back, and repack them in the slide box. Fill out the card and replace card, slides and small envelopes in the large envelope, which may then be mailed to the laboratory.

OYSTERS AND TYPHOID FEVER.

The oyster has recently been receiving from the sanitarian and the bacteriologist an amount of scientific attention which is probably unprecedented, even in the peculiar experience of the luscious bivalve. Dr. Klein's researches, which were undertaken on behalf of the Fishmongers' Company, went to show that while the influence of the oyster pollution on the general prevalence of typhoid fever had been probably a good deal exaggerated by popular opinion, the effect was, nevertheless, one of material dimensions, and sufficiently important to call for further study of the means of prevention. A French Commission, under the directing control of Professor Girard, has recently been examining the question, and his report — markedly cautious and conservative as it is — is drawn up on corresponding lines. He has no doubt that typhoid fever may be transmitted by polluted oysters, while he still believes that some of the cases cited in testimony of the fact are based on questionable evidence. He points out, emphatically, that the bacterial diseases of the oyster are not transmitted to man. The United States investigations confirm these conclusions. Dr. G. W. Fuller, of the Franklin Institute, declares that, "those who do not recognize any relation between the pollution of shell fish and the causation of disease have either not looked into the matter or have biased views for commercial reasons." A remarkable feature of the United States census reports is that the death-rate attributed to typhoid fever is nearly double the average normal among men collectively grouped as "sailors, pilots, fishermen and oystermen." — *Medical Press.*

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, SEPT. 2, 1905.

CITIES.	Population.*	Reported deaths in each.	Deaths under five years.	Percentage of deaths from					
				Infectious diseases.	Acute lung diseases.	Diphtheria and croup.	Typhoid Fever.	Cerebro-spinal Meningitis.	
New York	3,908,644	1,267	524	36.01	7.81	1.02	1.61	.63	
Chicago	1,990,730	510	188	44.51	4.31	1.76	2.15	—	
Philadelphia	1,407,966	437	153	29.06	8.00	1.14	3.48	.46	
St. Louis	633,606	—	—	—	—	—	—	—	
Baltimore	542,229	164	65	32.93	6.10	.61	3 45	—	
Cleveland	444,251	—	—	—	—	—	—	—	
Buffalo	400,645	—	—	—	—	—	—	—	
Pittsburg	362,403	—	—	—	—	—	—	—	
Cincinnati	338,377	—	—	—	—	—	—	—	
Milwaukee	325,900	—	—	—	—	—	—	—	
Washington	300,776	—	—	—	—	—	—	—	
Providence	196,744	70	28	30.00	—	2.85	1.43	1.43	
Boston	595,598	212	87	36.79	6 60	.47	2.36	—	
Worcester	127,963	40	16	22.50	12 50	—	2.50	—	
Fall River	105,697	28	21	57.14	7.14	—	—	—	
Cambridge	97,426	30	11	40.00	—	5.00	—	—	
Lowell	94,845	30	12	33.33	3.33	—	—	—	
Lynn	77,625	18	5	27.78	—	—	—	11.11	
New Bedford	74,221	19	8	36.84	5.26	—	—	—	
Springfield	73,484	19	4	15.79	5.26	—	—	—	
Lawrence	69,989	19	8	47.37	5.26	—	—	5.26	
Somerville	68,188	19	7	31.58	10.53	—	—	—	
Holyoke	49,124	14	8	42.86	—	—	—	—	
Brockton	47,782	7	2	14.29	14.29	—	—	—	
Malden	37,996	10	2	30.00	—	—	—	—	
Haverhill	37,818	16	6	25.00	—	—	—	—	
Salem	37,586	17	9	29.41	—	—	—	—	
Chelsea	37,577	8	3	—	12.50	—	—	—	
Newton	36,694	7	4	—	—	—	—	—	
Fitchburg	33,017	7	4	—	—	—	—	—	
Taunton	30,932	18	7	27.78	11.11	—	—	—	
Everett	29,108	3	1	33.33	—	—	—	—	
Quincy	28,067	6	2	33.33	—	—	—	—	
Waltham	26,239	7	3	—	14.29	—	—	—	
Gloucester	26,008	—	—	—	—	—	—	—	
Pittsfield	25,000	7	2	42.86	—	—	—	—	
Brookline	23,424	7	3	—	—	—	—	—	
North Adams	23,125	8	3	—	—	—	—	—	
Chicopee	20,187	10	5	50.0	10.00	—	—	—	
Northampton	19,942	3	0	66.67	—	—	—	—	
Medford	19,638	5	1	40.00	20.00	20.00	20.00	—	
Beverly	15,223	4	1	25.00	—	—	—	—	
Newburyport	14,678	—	—	—	—	—	—	—	
Hyde Park	14,402	3	0	—	—	—	—	—	
Woburn	14,401	—	—	—	—	—	—	—	
Melrose	14,394	5	1	60.00	—	—	—	—	
Leominster	14,290	—	—	—	—	—	—	—	
Marlboro	14,079	5	3	60.00	—	—	—	40.00	
Westfield	13,069	7	3	42 86	—	—	—	—	
Clinton	13,105	4	1	50.00	—	—	25.00	25.00	
Peabody	13,097	—	—	—	—	—	—	—	
Attleboro	12,702	—	—	—	—	—	—	—	
Revere	13,847	3	2	—	—	—	—	—	
Adams	13,463	—	—	—	—	—	—	—	
Milford	12,105	—	—	—	—	—	—	—	
Gardner	11,981	0	—	—	—	—	—	—	
Weymouth	11,588	5	1	—	—	—	—	—	
Framingham	11,549	—	—	—	—	—	—	—	
Watertown	11,303	1	0	—	—	—	—	—	
Plymouth	11,118	—	—	—	—	—	—	—	
Southbridge	10,947	8	5	87.50	—	—	—	—	
Wakefield	—	1	—	—	100.00	—	—	—	

*The population given for cities outside of Massachusetts is estimated. Those of Massachusetts are from the Census of 1905.

Deaths reported, 3,087; under five years of age, 1,218; principal infectious diseases (smallpox, measles, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 1,109; acute lung diseases 201, consumption 337, scarlet fever 3, whooping cough 31, cerebrospinal meningitis 17, smallpox 0, erysipelas 3, puerperal fever 11, measles 13, typhoid fever 61, diarrheal diseases 600, diphtheria and croup 33.

From whooping cough, New York 11, Chicago 8, Philadelphia 7, Baltimore 1, Boston 2, Lowell 1, Cambridge 1. From scarlet fever, New York 2, Worcester 1. From cerebrospinal meningitis, New York 8, Philadelphia 2, Providence 1, Lynn 2, Lawrence 1, Clinton 1, Marlboro 2. From erysipelas, Chicago 2, Boston 1. From typhoid fever, New York 21, Chicago 11, Philadelphia 15, Baltimore 5, Providence 1, Boston 5, Worcester, Medford and Clinton, 1 each.

In the seventy-six great towns of England and Wales, with an estimated population of 15,609,377, for the week ending Aug. 26, 1905, the death-rate was 17.3. Deaths reported 5,188; acute diseases of the respiratory organs (London) 44, whooping cough 65, diphtheria 33, measles 53, smallpox 0, scarlet fever 40.

The death-rate ranged from 5.5 in Hastings to 29.8 in Grimsby; London 16.7, West Ham 18.0, Brighton 18.4, Southampton 14.1, Plymouth 16.2, Bristol 14.0, Birmingham 21.7, Leicester 12.8, Nottingham 13.5, Birkenhead 13.0, Liverpool 20.1, Wigan 20.5, Bolton 14.6, Manchester 23.0, Salford 24.8, Halifax 13.5, Bradford 14.9, Leeds 17.1, Hull 22.8, Sheffield 19.5, Newcastle-on-Tyne 16.6, Cardiff 14.5, Rhondda 25.9, Merthyr Tydfil 23.3, Hornsey 6.8, St. Helen's 19.2.

METEOROLOGICAL RECORD.

For the week ending Sept. 2, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

DATE	Barometer.	Thermometer.			Relative humidity.			Direction of wind.		Velocity of wind.		Weather*		Rainfall in inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A.M.	8.00 P.M.	Daily mean.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	
S. 27	30.10	58	62	54	86	66	76	N	N	10	6	O.	C.	.04
M. 28	30.11	61	71	51	71	56	64	N	S W	9	8	C.	C.	0
T. 29	29.83	66	73	60	89	60	74	W	W	8	5	O.	C.	.09
W. 30	29.64	69	75	63	71	78	74	W	S W	12	5	O.	O.	.32
T. 31	29.80	62	64	59	97	81	89	N E	S W	13	4	R.	C.	.10
F. 1	30.08	63	70	58	79	74	76	W	S W	7	9	O.	O.	0
S. 2	30.18	61	68	54	91	83	87	W	S E	8	7	F.	O.	.07
Sep.	29.96		69	57			77							.82

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. Sep. Means for the week.

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING SEPTEMBER 9, 1905.

A. C. CRUNWELL, surgeon. Detached from the Naval Hospital, New York, N. Y., and ordered to the "Wolverine."

T. W. RICHARDS, surgeon. Detached from the "Arkansas" and ordered to the Naval Recruiting Station, Baltimore, Md.

B. L. WRIGHT, passed assistant surgeon. Ordered to the "Arkansas."

R. K. MCCLANAHAN, assistant surgeon. Detached from the Naval Recruiting Station, Baltimore, Md., Sept. 5, and ordered to Washington, D. C., Sept. 6, for examination for promotion and then to wait orders.

M. E. LANDO, assistant surgeon. Detached from the Naval Hospital, Mare Island, Cal., and ordered to the Naval Medical School, Washington, D. C.

H. DEVALIN, acting assistant surgeon. Detached from the "Wolverine" and ordered home to wait orders.

C. H. DELANCY, passed assistant surgeon. Ordered to the "Paducah."

C. ST. J. BUTLER, passed assistant surgeon. Detached from the "Castine" when placed out of commission and ordered to the Naval Hospital, San Juan, P. R.

J. E. PAGE, passed assistant surgeon. Detached from the "Lancaster" and ordered home to wait orders.

R. A. Y. BACHMANN, assistant surgeon. Ordered to the "Lancaster."

M. W. BAKER, assistant surgeon. Detached from the Naval Station, San Juan, P. R., and ordered home to wait orders.

RECENT DEATHS.

DR. URBAN FRANCIS MARTIN, of New York, died at the Presbyterian Hospital in that city on Sept. 6, at the age of twenty-eight years.

THOMAS GILVILLAN, M.D., M.M.S.S., died in Northampton, Sept. 9, 1905, aged seventy-five years.

BOOKS AND PAMPHLETS RECEIVED.

The Treatment of Fractures, with Notes upon a few Common Dislocations. By Charles Locke Scudder, M.D. Fifth Edition. Thoroughly Revised. Illustrated. Philadelphia and London: W. B. Saunders & Co. 1905.

Nothnagel's Practice. Diseases of the Kidneys and of the Spleen, and Hemorrhagic Diseases. By Dr. H. Senator and Dr. M. Litten. Edited, with additions by James B. Herrick, M.D. Authorized translation from the German, under the editorial supervision of Alfred Stengel, M.D. Illustrated. Philadelphia and London: W. B. Saunders & Co. 1905.

Address.

METHODS IN MEDICINE. *

BY LEWELLYS F. BARKER, M.D., CHICAGO, ILL.

It was a happy inspiration that led the Committee to Procure Scientific Papers to offer as one of the principal attractions of this meeting of The Massachusetts Medical Society a series of demonstrations exhibiting and explaining the various technical procedures pertaining to the practical part of our profession. Nothing could be more interesting or stimulating to the members of a society of busy practitioners than such an exposition of modern manipulations as, thanks to the sagacity and enterprise of your committee, and the energy and good will of the demonstrators, has been arranged for; and I can conceive of nothing more likely successfully to entice a group of men from the absorbing and exacting routine in which they are daily immersed, or more helpful and recompensive to them after they have yielded to the seduction, than an opportunity to view the illustrations, here so vividly presented, of the application of all kinds of aids to the art of making accurate observations on patients. While every one of us is doubtless familiar, in a general way, with the great progress which has been making in the modes of examining patients and of gathering data regarding the form and functions of their various organs and tissues, and the constitution of the body-juices, it will come to many of us as a surprise, I feel sure, that there is such a wealth of methods that can be and should be used to help us in our daily work. A great many more helps to diagnosis than those actually shown might have been included; many have been unavoidably omitted, but a wise selection has undoubtedly been made, and one sufficiently comprehensive, I think, to convince each of us of his shortcomings. "Knowledge of the condition of a patient is to be drawn out of the patient himself, rather than manufactured without the aid of the senses in the interior of the physician's head." It was to emphasize this fact, Dr. Councilman wrote me, that the committee planned the demonstration of methods at this meeting. The only sure way to secure what information is acquirable regarding a patient in addition to what one is told about him, is to examine him in a strictly systematic way, each part in a suitable sequence, with utilization of every aid which will reveal to our senses any deviation from the normal. There is not one of us, I venture to say, who will not return to his practice, in view of what he has here seen, more sensible of his deficiencies and more contrite of his inexactness, than before; each of us will renew his determination to perfect himself in accurate observation and to elevate to the highest level, which his powers and the exigencies of his practice will permit, the standard of his routine. I may speak for myself, at any rate, in this way, and I believe that in voicing this sentiment, I give expression to the thought and feeling of many of you.

Though I have chosen "Methods in Medicine" as a title for my remarks, I shall try to make it clear that, in my opinion, all so-called methods in medicine are but parts of, or aids to, the one great method of acquiring knowledge, viz., the method of science. Science has come to be recognized as universal in its scope; it includes in its legitimate domain the acquisition of truth in every sphere; and whether it deals with the facts of mathematics, the facts of geometry, the facts of physics, the facts of chemistry, the facts of biology, the facts of psychology or the facts of sociology, it deals with them in one way, in what we call the scientific way. And that way is to collect facts carefully, to arrange them according to their likeness and sequences, and to interpret them in the simplest manner compatible with verification by healthy minds of our own grade of culture. It is in this way that knowledge in medicine, as in all sciences, has been and is being advanced; it cannot be advanced in any other way.

MEDICINE, AS IT ADVANCES, TENDS TO BECOME MORE SCIENTIFIC.

Biology, far more complicated than physics and chemistry, has, by virtue of the intricacy of its problems, necessarily lagged behind the other sciences, and medicine, the most complex and difficult branch of biology, is still in a primitive stage of evolution as compared with the sciences which deal with the phenomena of the inorganic world. Born of the fear of death, and of the sympathy of man with the sufferings of his fellows, medicine has been compelled from the earliest times to be active as an art before it developed as a science. It is the necessity of action which has always, consciously or unconsciously, led the race, however slowly, to increase its knowing; if a science of medicine is gradually becoming established, it is because in order to do what is right man must first learn to know what is true, because successfully to predict the future he must understand the present and the past. Science began in myth; it passed through dogma; the tendency to-day is to limit its meaning to verifiable truth.

Medicine, like all knowledge, began by chance observation; it has developed through reasoning and the spur to further observation which reasoning has given. But medicine, like all other sciences, and perhaps more than most, has been held back by faulty observation and imperfect reasoning. It has, in turn, been theistic, dogmatic and metaphysical; it is only very slowly becoming rational, only very gradually scientific. As it progresses, however, it tends more and more to hold to the path of science, for it is learning that in stepping off this road it is invariably led into by-paths which run backward.

The scientific habit of mind is sure to pervade medicine more and more as enlightenment spreads.

* Read before The Massachusetts Medical Society, June 13, 1905.

In the preparation of this address free use has been made of the writings of Claude Bernard, J. Henle, T. H. Huxley, J. Loeb, J. S. Mill, E. Mach, W. Ostwald, K. Pearson, L. Stephen, R. Virchow, C. A. Wunderlich and W. Wundt.

The enormous advances in theory and practice directly attributable in our time to the application of the method of science to the study of disease and its cure will make us cling to this method as our salvation. We have been taught that there is no short and easy cut to knowledge, such as the ancients sought and hoped for; we are learning to be patient and to be willing to settle the details that are solvable, rather than fruitlessly to attempt to attack the problems of "the whole" that are for us unapproachable; we study, for instance, water as gas, as liquid and as solid rather than the origin of the universe; we inquire as to the characters of the organs and juices in health and disease rather than bother our heads about vital force and first causes. In medicine, as in other departments of knowledge, they who contribute to advance are those who make sure that their facts are well-established, that their classifications of facts are based upon fundamental similarities, that their ideas of the sequence of phenomena conform to actual experience, and that their own conceptions, inferences and interpretations have been so thoroughly criticised by themselves that they will bear the test of the fair criticism of the minds of other healthy and enlightened men.

THE METHOD OF SCIENCE.

The method of science is the only method which may be applied hopefully to the solution of the problems which we meet with as medical men, — the problems of diagnosis, of prognosis and of treatment. It is surely important, therefore, not only that we should be trained in the use of that method but that we should from time to time take stock, as it were, of our methodological practice to see in how far we are utilizing the scientific method, and in what way, if any, we may do so more perfectly. And such a stock-taking is, I imagine, in part at least, the object of this meeting.

On reviewing the development of any science, especially one which is well constituted, it is easy to recognize three phases through which it has passed: first, a phase in which facts are established and collected; second, a phase in which facts are compared and arranged according to their mutual relations and connections; and, third, a phase in which by the aid of the imagination these relations and connections are epitomized in the form of brief formulas, or so-called general laws. These three phases are not sharply separable from one another; all three may be met with at once in different parts of the same science. In medicine we are as yet largely in the first and second phases; we are busy collecting facts; we have already done something toward classifying phenomena, toward determining their order in nature, but the science is only slowly reaching the stage of development when the formation of brief laws is feasible. When we remember how greatly thought is economized by the law of gravitation, for instance, or the law of the conservation of mass, or the law of the conservation of energy, or the law of organic evolution, how wide a range of phenomena is summed up in each, we realize the importance of the creation of scientific laws. As these fundamental laws of nature have been found to describe satisfactorily the sequences and relationships for a very large group of phenomena, so in medicine we shall gradually attain to simple statements which will satisfactorily describe succession and relation among more limited ranges of medical facts.

The method of investigation is always the same, no matter what the natural science. The material differs with the individual sciences, the aids to investigation vary, but the mind acts in one and the same way. The groups of sensory impressions which the mind receives and combines with stored sensory impressions of previous conscious states, it projects outside itself; these constitute the only "reality" of physical phenomena possible for us, the only "external world" we know. By association and abstraction these conscious states which are called percepts give rise to other states of consciousness called concepts and from them we draw inferences. These concepts and inferences together with their perceptual antecedents are the facts of science. Science has nothing to do and can have nothing to do with the "beyond" of sense-impressions; if there is anything "behind" them which is the source of them, it is unknowable to us; the "things-in-themselves" of the metaphysicians, scientists know nothing about and need not know. What we do when we acquire knowledge is to collect sense-impressions, store them, combine them, compare them, determine their relationship and order of succession, and by an act of creative imagination epitomize descriptions of them, into short statements or formulæ. The mind analyzes, synthesizes, abstracts and determines. Induction and deduction are its forms of operation. Observation, reflection, experiment and comparison are their aids. Science would be impossible if the minds of normal human beings of the same culture-grade did not act in much the same way, if the faculties of perception and reflection were not nearly identical among such beings. If the routine of sensory impressions which can be gained were suddenly to cease to be practically the same for one mind that they are for another, or the processes of association and conception to be nearly identical, there could be no agreement among men. One man would create an entirely different external world from that which another would construct, and every man would be insane to every other man. There could be no general validity for a law; there could be no extensive common knowledge. As the human race has advanced, the capacity for receiving and storing sensory impressions has increased and with it the power of reasoning has steadily developed. Through reasoning man is enabled not only to widen the range of his perceptions, but also to summarize them and the concepts derived from them in a way which tremendously economizes his thoughts. He is thus enabled when he re-

ceives new sense-impressions to respond more rapidly to them by suitable action. This largely accounts for the superior place he occupies in the struggle for existence.

SCIENTIFIC MEDICINE.

Observing facts, arranging them, and summarizing them in thought-symbols, so as to increase knowledge and economize thinking in order that suitable action may follow most surely and quickly upon impressions of sense is, then, the business of science. Making medical observations, classifying them according to resemblances and succession and epitomizing them in brief statements so as to improve our knowledge of the normal and diseased body in order that we may quickly recognize abnormal phenomena and undertake appropriate treatment is the business of scientific medicine.

Scientific medicine, like all natural science, began with simple observation, with direct sense-impression. Observation alone and unaided, however, cannot bring us very far, and the idea that it can, and that medicine is, and must remain, a purely observational science is a grave mistake. Though absurd, when one thinks other than naively about it, many medical men have fallen into this error; it has been responsible for the serious retardation of medical science. Unaided observation is bound to be very inexact; through the use of reason, scientific men have learned to experiment and through experiment to invent artificial aids which increase and render more precise the powers of their organs of sense.

The unaided eye can collect only a limited number of sense-impressions regarding the body of healthy and diseased persons, but with the aid of the microscope, the spectroscope, the polariscope, the fluoroscope, the ophthalmoscope, the laryngoscope, the bronchoscope, the cystoscope, and a host of other implements, as well as through the use of chemical reagents and the inoculations of bacteriological culture media, the number of visual impressions can be multiplied more than a thousandfold. The unaided ear can collect only a few sensory impressions directly from the body, but through the mediation of the stethoscope and by the experimental production of sounds by percussion, the number of auditory impressions which can be gathered from a patient is augmented. The sense organs of the physicians' skin gave unaided to the earliest doctors and give to doctors to-day valuable information concerning pressures, pain, coolness, warmth and the like, but that information is minimal in amount and vague in character contrasted with the wealth and exactness of phenomena revealed to us by the instruments which the modern medical man uses as his aids. The sensory impressions, gatherable by the unaided sense organs, which lead to the conceptions of size, shape, position, weight, movement, time and rhythm are few and futile in comparison with the sensory data furnished us by the rule, the caliper, the balance, the chronometer, the ophthalmometer, and the graphic recording machines which medical science has applied. The tendency is to pass from the vague to the exact; to replace crude estimation by quantitative measurement expressed in terms of standard units. Medicine has here felt the influence of the physical sciences; it is beginning to be shame-faced when it says "a little" or "a good deal," and is laudably ambitious to express itself in centigrade degrees, in centimeters, grams, and seconds, in dynes, ergs, coulombs and watts.

This tendency to rigid exactness results in the challenging of every alleged medical fact to make sure that it is a real truth, for medical science has chafed under the particular disrepute into which "medical facts" have somehow fallen, it having before now been sarcastically remarked that "nothing can be less deserving of credit than medical theories, except medical facts." The precision which characterizes the observation of the best modern medical observers would have been impossible had medicine been content to remain an observational science; it has been brought about by reasoning, by the formation of hypotheses and by the subjection of these hypotheses to the control of experiment. The elaborate aids to observation used to-day by the diagnostician are the applied results of physical, chemical and biological experimentation; and further, every time a physician listens to the sounds of the heart through a stethoscope, every time he tests the knee kick, every time he measures the blood pressure, every time he makes a Widal test, he performs an experiment in order to extend his observation or make it more accurate. Observation and experiment overlap; to increase his powers of observation, the observer uses implements derived from experimental investigation; these new aids make him observe with greater precision.

An experiment is really an observation provoked at the will of the experimenter; the observation is made then under peculiarly favorable circumstances, for the attention of the observer is prepared and his interest is sharpened by the question he is putting to nature. The experimenter commands the phenomenon to appear in circumstances which he has modified; by isolating or varying the circumstances he is able gradually to decide as to the relative importance of each, and in many instances he can determine the conditioning circumstance, that is, the one which is invariably antecedent to the phenomenon, or what is called its "cause."

Unfortunately, in medical science, observers on account of the complexity of the phenomena and their apparent inaccessibility to experiment have been slow in applying the experimental method to medical investigations. As soon as it began to be systematically applied, however, and especially after the recognition of the fact that judicious experimentation on animals permits an actual alteration of the phenomena of life and yields observations which are largely applicable in human physiology, pathology and therapy, medicine began to make progress at an unprecedented speed. Knowledge made so fast

that special branches of medicine became established and observers, advantageously to themselves and to medical science, began to specialize, to limit their observations and experiments to particular fields. Experimental morphology, experimental physiology, experimental pathology, and experimental therapy are the most helpfully productive sciences in medicine to-day; in them lies our main hope for the progress of medicine in the future.

Next in importance to the help which experiment affords to the scientific method in medicine and really inseparable from it is the aid which comes from comparison. It is this aid which lies at the foundation of various logical methods of procedure, of analysis, of synthesis, of abstraction and of determination. It is the implement which is used in arranging medical facts according to their mutual relations and connections. Phenomena in physiology, pathology and therapy which resemble one another are graded according to their agreements and differences. As a result of the classifications thus established arise our conceptions of physiological processes, of disease phenomena, and of the effects of treatment. We all know how the older ideas of the effects of various forms of treatment of pneumonia and of typhoid fever have been rendered ludicrous by the application of the comparative method.

The statistical method, made popular especially by Louis, is an important application of the comparative method; it helped to clear up the vexed questions concerning the continued fevers, and is to-day a prevalent method among medical men. It has its own drawbacks, however, and these too often go unrecognized. To be of value the statistical method must be discriminating; even epidemic diseases vary in intensity in different outbreaks, so that observations made in one epidemic may lead to conclusions very different from those in another. In the use of the statistical method, there are so many pitfalls for the unwary that the taunting remark is sometimes heard that statistics can be made to prove anything in medicine. Unless statistics deal with observations made by one man, at about the same time and upon patients in similar circumstances, the physician who employs them is but too prone to become the victim of many illusions. I am inclined to think that a part of the energy now devoted by hospital physicians to the compiling of statistics could be more profitably employed in the application of the experimental method to the many problems which clamor for solution and are solvable by it. I would not be misunderstood as decrying the legitimate and appropriate use of the statistical method. Far from it; as a part of the comparative method it is a valuable helpmeet to the experimental method in scientific medicine. It is only the imperfect application and exaggerated use of this method to the exclusion or complete subordination of the more important experimental method against which I would register a protest. Comparison is far inferior to experiment, especially for settling questions of cause. A few experiments will often settle a question of causal relation definitively, where thousands of the most laboriously compiled statistics would throw no light upon conditioning sequence.

The comparative method has been of especial value in the study of symptomatology. The comparison of individual medical cases with all their phenomena led to descriptive or systematic zoölogy and systematic botany. As medicine has become more scientific, the mind has ceased to be satisfied with such descriptive classifications as the clinical symptoms and syndromes represent, and with the "clinical types" set up, and it is ever on the alert to replace them by classifications of a developmental or genetic character. Just as systematic zoölogy and systematic botany have had to give way to general morphology, so the older nosologies in clinical medicine and surgery are gradually being supplanted by new ones based on etiology and pathogenesis. In the newer classification, generic rather than individual comparison is made. It was experiment that brought about the revolution in classification in zoology and botany; it is the application of the experimental method that is reforming medicine to-day and making generic comparison so much more useful than the old individual comparison. White swelling of the knee, malum coxæ, scrofula, pulmonary consumption, Pott's disease of the spine, tabes mesenterica, renal phthisis, cold abscess, lupus, — terms referable to individual comparison, — are all joined together in and subordinated to the one term of generic comparison, — tuberculosis. Both individual and generic comparison are necessary; the application of the former precedes the application of the latter, but the latter makes more use of induction, is more satisfying to the mind and is sure to come into greater use as medicine becomes more scientific. Even the term tuberculosis will some day — indeed, may now — be regarded as tinctured in many respects with older ontological conceptions of disease, and the time will come, if it be not already here, when we shall have, based on the functional conception of pathology, a still more general grouping of which the function deviations of tuberculosis will be but special instances. The notion of disease as an entity, of the personification of maladies, will be replaced ultimately by descriptions of the links in the chains of invariable sequences of functional phenomena. In the construction of these higher and more useful thought symbols, comparison will, however, be less effective than experiment.

Scientific medicine has a great advantage over philosophical or scholastic systems of medicine in that it is independent of personal authority. It demands that its facts and its principles be not contingent upon the decisions of any individual thinker. The successions maintained by it to exist aomong phenomena and the laws which condense them into brief formulæ must leave no liberty and room for individual fancy. Scientific medicine, using the method of science, contains within itself its own criterion by which

its facts, its propositions and its opinions can be tested. A thing is not so any longer because Hippocrates said so, or Galen, or Sydenham. Because Darwin, Virchow or Pasteur held an opinion in their time does not necessarily make that opinion valid in the century in which we live. Knowledge is but relative; it takes new forms as science advances. As the province of experience is enlarged or hitherto disconnected territories become united the older conceptions become inadequate and no longer tenable and must be replaced by new symbols. Verification by experience, not justification by faith, as Huxley was wont to put it, is the touchstone of science. The control of conception by perception, the trial by experience, is the true Ithuriel's spear by means of which we distinguish what is true from what is false in our ideas of disease and of the treatment of the sick. It would be as wrong for us to-day to accept unchallenged the statements of the great scientists of the nineteenth century as it was for the followers of Galen to accept his writings as of supreme authority for more than a thousand years. We may admire Virchow, we may venerate the memory of Pasteur, but we shall act best if we do as they did and preserve only those ideas and theories of our predecessors which agree with the collective state of knowledge in our time. There are truths which we can see to-day which were invisible to Virchow. There are errors in the opinions of Pasteur which were inherent to his time and which the scientists of this century must try to recognize and destroy. Non-submission to his authority is, in a sense, one of the highest tributes succeeding generations of scientific medical men can pay to the memory of a medical genius.

This devotion to doubt, this consecration of distrust, this systematic questioning of results, is the safeguard of method in medicine as it is in all sciences. Though the medical man must believe in an invariable order in nature, since all progress in medicine is based upon this belief, still he should always be hesitatingly apprehensive lest he has failed to discover the invariable order in a given case, lest he has confounded a mere coincidence with an inevitable sequence; too often he will find that in with his fact he has unwittingly mixed some purely hypothetical ingredient. The observation that a pneumonia patient recovers after the application of a clay poultice, that a man with disturbed digestion seems to improve on lithia water, or that a leukemic spleen diminishes in size under the influence of x-rays, will not justify far-reaching conclusions concerning the treatment of pneumonia, the effect of the alkali metal-ions on a "uric-acid diathesis," or the curability of leukemia. The scientific medical man, though often compelled to act without full knowledge, will always be aware of his ignorance, and will ever be tormented by the craving for more precise knowledge. He is forced to act as yet largely empirically, but he will *desire* to act rationally. In his hands the health and the life of a patient will surely be safer than in the hands of the cocksure healer who knows (*sic*) that he can cure, and is content to be ignorant as to how he does it, or in those of the proud-spirited enthusiast who founds his opinions upon so-called medical tact, upon vague medical intuition or upon some inspired "medical mode of thought" which, in his phantasy, transcends the thinking of science.

Scientific medicine can never be content until it has thoroughly marshalled the facts concerning the body in health and disease, until by observation and experiment and by induction and deduction it has recognized the relationships of these facts to one another, or until it has formulated general laws which conceptionally symbolize in brief form their regular sequences. A taste of this scientific method and an experience that this method, though dedicated to the principles of "doubt," brings the only "certainty" worthy of the name, should be obtained if possible by every physician early in his career. For the more rapidly the medical profession becomes imbued with the scientific spirit, the more quickly will medicine become physiological, rational and precise, the sooner will therapy cease to be occult, expectant, nihilistic or merely empirical in order to become judiciously active and definite. The therapy of scientific medicine will not simply avoid hindering the "healing power of Nature"; on the contrary, it will in many cases become able aggressively to interfere with pathological processes and compel the return of normal function.

THE METHOD OF SCIENCE AND MEDICAL PRACTICE.

It has been too much the tendency to separate sharply medical science from the medical art, to contrast knowledge and action as widely divided things in medicine. Too much stress has been laid upon *science* as the mere satisfaction of intelligent curiosity, and upon *art* as mere manipulative skill, largely independent of thought and of systematized knowledge. Convictions concerning the science of medicine and the art of medicine are changing; it is becoming ever clearer that while medicine has two aspects, the so-called theoretical side and the so-called practical side, scientific medicine includes both. On the theoretical side scientific medicine deals, as we have seen, with the search for facts, the arrangement and co-ordination of facts and the establishment of short generalizations recapitulating the facts and their sequences; on the practical side it deals with the rules and methods for facilitating the performance of the work to be done in making diagnoses and instituting treatments and with the acquisition of skill in the work itself, that is to say in the carrying out of these rules and methods. While it is true that science often makes greatest progress through the efforts of men who avowedly seek truth for truth's sake, independent of any practical application of the truth, and, further, that too great an insistence upon an immediate practical aim in scientific research results very frequently in total sterility of production, an unprejudiced survey of the history of knowledge and action will reveal the fact that the cravings of mankind

for brief descriptions and for interpretations, or in other words, for *knowledge*, are the impulses which in the long run, through their effects, account for that *action* which has permitted the race to hold its own in the struggle of life; in other words, better *knowing* has always resulted ultimately in better *doing*, the art of making the exertion more fitting has been preceded by progress in the conceptual symbolization of an ever-expanding body of perceptual experience. The race constantly tends to rid itself, even if slowly, of false observations, reasonings and imaginations, for they are bound to impede its progress and not to favor its work; it conserves tenaciously the true observations, conceptions and inferences made by it, for they have contributed to the improvement of its comportment in the past, they are its only guide to safe conduct in the present, and they, together with similar ones to be created by the same method later, form the sole hope for suitable behavior in the future. The two aspects of scientific medicine, the theoretical and the practical, the knowledge side and the art side, ought not to be divorced from one another; if attempts to abrogate the close relation which should exist between them were at any time successful, medical art would be sure to fail to progress, and if the medical art did not advance, it would be bound to deteriorate. Medical science and medical art should live in a state of wedlock. Their conjugal harmony should never be disturbed by lack of appreciation of one for the other.

The objection is often made that medical science being inexact, the practitioner cannot be guided by it, but must rely upon his own practical experience in the treatment of the sick. The so-called "practical" man, especially, tends to regard theory and practice as incompatible, to deny science and to regard its contributions as useless ballast not needed by the practitioner. I have heard, and doubtless some of you may have heard, physicians of long experience meet the enthusiasms of the medical student regarding progress in scientific medical investigation with the discouraging remark: "The quicker you forget such nonsense the better off you will be. Discard theory; be practical. Do not be a scientist; be a physician." The man who makes such a comment intends to do his young friend a good turn; but he overlooks the fact that scientific medicine includes the results of the observations and experiments of the most skilled members of the profession for centuries, and does not realize that he is recommending the limited personal experience of one man as its substitute; in opposing theory he forgets that every practitioner, even the crudest empiricist, unconsciously forms hypotheses as to what he sees, and uses these as a guide in his treatment, no matter how non-speculative he may think himself to be; he neglects to consider that, instead of the activity of the disciplined mind utilizing the accumulated wisdom of the past, he is advising blind experiment based on instinct and the illogical vagaries of an untrained imagination.

The men who offer such advice look askance at the training given at present by some seven or eight of the better medical schools in this country. A criticism current is that these schools are "making scientists, not practitioners." Let us examine this criticism and see if it be well-worded. If the fact be that these medical schools are turning out graduates who know a great deal about anatomy, physiology, pathological anatomy, physiological chemistry and bacteriology, and nothing or very little about the available methods of diagnosis of disease and the best methods of treating it, I should agree with the critics that the training of the schools was insufficient, but not in their phrasing of the criticism; the criticism should read, "Such schools are educating men in some parts of medical science and not in others, which are equally or even more important for the medical practitioner." But if the fact be that there are medical schools, which are producing, as well as can be done at present, graduates who are versed in the diagnostic and therapeutic knowledge which has thus far been gained either empirically or rationally, and are trained in the application of it, and are, in addition, imbued with the desire to replace empiricism by rationalism as speedily as possible in every part of the subject; who have learned how to appreciate evidence, and to form judgments independent of personal bias, who have come to distrust personal authority, and to subject the observations and opinions of themselves and others to the rigid criticism of experience; who have realized that to predict the future accurately and to control phenomena necessitates a foreknowledge of the invariable sequence of events in the domain concerned; in other words, graduates who have learned what the method of science is and how to use it, then the statement that such schools are "making scientists, not practitioners," is mere stultiloquy, for the schools would be making at once scientists and practitioners, *i. e.*, scientific practitioners, rather than merely scientists or merely practitioners. We do not want medical schools to turn out only scientists who cannot be practitioners in the best sense, nor do we desire them to give us practitioners who have no adequate knowledge of science. If medical schools were to try to graduate merely empirical practitioners and not scientific physicians, the inevitable result would be a generation of healers who would be largely charlatans and quacks — a group of self-confident pretenders to medical skill, indolent, ignorant and incompetent. What has always been needed and is surely most helpful to-day is the scientific practitioner who recognizes the possibilities on the one hand and the limitations on the other of medical science and the medical art in their present state, who knows that it is necessary to act empirically where reason does not yet guide, but who will abstain from an action which experience has proven to be harmful and will do all that is in his power by observation and by judicious experiment to advance medical knowledge. We cannot do without the well-trained medical practitioner,

who, even if he have but little time to experiment, will be a contributor to medical science, by noting exactly and discriminatingly the phenomena presented by the cases he sees, and who will understand which of them can yield profit to science.

The empirical or preliminary period has lasted longer in medical science than in the sciences of inorganic nature, owing partly to the far greater complexity of the problems of medicine, and partly to the antiscientific tendency to rely upon "tact" or "intuition," or the belief that men learn medicine in some way without knowing how, the inclination unduly to exalt the personality of the physician and to diminish the importance of science. Medicine, however, gradually, and more or less unconsciously, entered upon an experimental stage. Physicians early experimented with drugs, but at first they did so very injudiciously, and a Hippocrates was needed to point out the blindness of the early experimentations and to show the value of more thorough observation. By the expectant method Hippocrates proved that many patients suffering from diseases in which cure was attributed to drugs, got well if left to themselves. Mere observation and classification as urged by Hippocrates are not, however, permanently satisfying to either patient or physician, nor should they be. Experiment again had to be resorted to, and gradually experimentation has found profitable directions. It is now clear to scientific medical men that a scientific therapy must be based ultimately upon physiology and that the cultivation and expansion of physiological science is essential if the development of a rational, physiological therapy is to be favored.

While scientific therapy adopts the Hippocratic doctrine of taking advantage of the happy tendencies of nature, it rejects it in as far as it tries to dominate nature in her bad tendencies by actual interferences with processes. It does not wait for the tissues and juices of a child to build an antidote for the poison of the diphtheria bacillus; it hunts for a means of artificially preparing an antidote, secures it, injects it and the child gets well. If the doctrine of expectancy and nihilism had been applied in physics we should have had no ocean greyhound, no electric light, no wireless message. We shall miss entirely, or for a long time be deprived of, as great or greater achievements in medical science if we do not push it forward along experimental lines.

Scientific medicine does not undervalue observation or good clinical work; it does not maintain that the laboratories of the auxiliary sciences are the only places whence illumination comes. On the contrary, scientific medicine is more cognizant to-day than ever before that the ideas which stimulate that experimental work which will be fruitful for diagnosis and treatment must come in part, at least, from sick people themselves; it sees a great danger in the almost total separation of the clinic from the experimental laboratories, and is discontent with a condition in which only a very few clinicians are well-trained experimenters and only a very few experimenters are well-trained clinicians. The scientific physician should have a large bedside experience, should be familiar through personal observation on human beings with the forms of disease upon which he is working, should be able to make accurate diagnoses and true prognoses and have a knowledge of the various remedies which empiricism has recommended, and he should possess real skill in applying them. But he will be more than an observer and more than an empirical therapeutist; he will try to penetrate by the aid of experimentation into the mysteries of disease phenomena in order to untangle them, to understand their proximate causes and to control them. Expectancy and empiricism must for him be supplanted by reflection and experimentation. It is not enough for the scientific physician that mercury and iodide of potassium will cause the changes produced by the virus of syphilis to disappear; he is tormented by the need to know what the virus of syphilis is and to find out how the cure occurs; though he has not yet found out, he will not be content until he does. Nor is it enough for him that diphtheria has been practically robbed of its terrors by the introduction of the serum treatment; he will be restless until he has isolated from the antitoxic serum the actual antitoxic substance in a pure condition, for the injection of horse's serum into babies, while a great advance on any previous treatment of diphtheria, still reminds him too forcibly of the witch's cauldron.

The scientific physician will not be the victim of any illusion that he himself is to settle experimentally all or even many of the problems which confront him and cry for solution; but he will try to settle at least some of them by experiment himself, and above all he will, under the influence of the scientific spirit which animates him, stimulate his colleagues and pupils to similar work, and support and encourage in every way possible all efforts to make the science of medicine more exact through the application of the experimental method.

It has sometimes been argued that the scientific physician is more at a loss what to do at the bedside of a patient than is the empirical physician. The empiricist is never embarrassed; if one remedy doesn't work, he tries another, and so on. He is often very popular with his patients, for the belief is very common among the laity that medicine has a remedy for every ailment, and that the only difficulty is to lay hands on the right one; a patient will often prefer almost anything to nothing in the way of treatment, and the empiricist has always something to recommend. A scientific physiologist or pathologist, who is not also trained as a clinician, would undoubtedly be embarrassed at the bedside of a patient both in making a diagnosis and in advising treatment. The scientific physician must, therefore, be as well educated on the clinical side as he is in physiology and pathology. Though he sets up as his ideal the establishment of a therapy based on physiology, he will not, when the

physiological basis is wanting, withhold a remedy which empirical experience has proven useful. In every science parts remain in the empirical state, while other parts become well founded through experiment. In medicine most of our therapeutic measures are as yet empirical, and only a few have a physiological or well-grounded experimental basis. Scientific medicine includes empirical medicine as well as experimental medicine, and the scientific physician differs from the empiricist, not in any limitation of resource, but in that he is unwilling to work without continually struggling to pass out of the obscurities of empiricism into light.

An unintentional obstacle to the advance of the scientific method in medicine is to be found I believe in the attitude of some of the representatives of the fundamental sciences of anatomy, physiology and pathology. They sometimes express the opinion that diagnosis, prognosis and therapy are not sciences, but only applications of science, by which they mean that all the clinical man can do is to make applications to his work of the sciences of anatomy, physiology and pathology. This is an old fallacy and it has many analogies. The fallacy lies in the definition of science. The physiologists and anatomists who exclude diagnosis and therapy from the list of sciences would, to be consistent, have to exclude physiology and anatomy also, for physiology, is in the same sense, largely applied anatomy, applied physics and applied chemistry; similarly, chemistry is largely applied physics, and physics, in turn, largely applied mathematics. As a matter of fact all science which deals with concrete phenomena is "applied" science; the only "pure" science is mathematics. This denial of the rank of science to diagnosis and therapy, while physiology and anatomy are accepted as sciences, is an invidious distinction which smacks of the old aristocracy of learning. The sciences which are more precise are not prone to grant many concessions in the way of recognition to the sciences which are slowly becoming precise. The "pure" chemist shrugs his shoulders when physiological chemistry is mentioned; the physicist used to be shocked to hear engineering called a science, just as the physiologist is, to hear pathology and therapeutics referred to as sciences. But science has turned democratic. She welcomes as her own child every domain in which facts are marshalled, arranged and epitomized. Diagnosis has its own group of facts which are gradually being classified according to their complex mutual relations, and expressed in shorthand; so has therapy. Diagnosis and therapy may be subdivisions of physiology if the latter subject be taken in a very broad sense; but then physiology may be regarded also as a branch of physics taken in a very broad sense. The laws of physics do not include, however, all that is known about physiological phenomena, nor do the laws of physiology exhaust everything that can be said about pathology and therapeutics. Pathology and therapeutics are far more complex sciences than physiology and anatomy; the former have new kinds of manifold characters which are not present in the latter. Anatomists and physiologists really wish to see physicians become more scientific; it behooves them, then, to grant that diagnosis and therapy are sciences in the "process of becoming," for by so doing they range themselves on the side of the scientific method in clinical work and not on the side of medical tact, medical intuition, the medical mode of thought, medical inspiration, medical personality, and those other antiscientific, undefinable and non-examinable Divine gifts which the enemies of science find it so convenient to fall back upon.

The method of science, then, is the best method the medical practitioner can use; investigations made in diagnosticating disease and in ordering treatment differ from all other investigations in the materials worked upon, but not in the method employed. There is only one good method of investigation and it is applicable to all kinds of material. It is the method which makes sure of its facts, which establishes invariable sequences and which summarizes its results in brief statements which economize thought and facilitate prompt and suitable action. It is the method which eliminates personal prejudice so that its results are equally valid for all the normally constituted and adequately disciplined intelligences of the time. Diagnosis and therapy cannot do without this method; it is the sole method of progress.

An attentive examination of the various supports to the scientific method in medicine, demonstrated at this meeting, will reveal the fact that the aids selected are almost entirely concerned with multiplying the possibilities of gaining percepts and of making those percepts definite — in other words, with the increase of the number and accuracy of observations of patients.

It is clear that the committee in charge is of the belief that those of us who attend this meeting can be helped most by being encouraged to collect facts in as great variety, and as exact in character, as is possible through the objective examination of the patient himself.

Other things are of enormous importance, of course, in medical practice; the arrangement of the facts after they are collected is one, the formation of hypotheses regarding them (to be tested by collecting more facts) is another, the drawing of conclusions based upon comparison with other cases in our experience or in the experience of others, and, where possible, upon experiment, is still another, and, finally, there is the "fitting exertion," — the therapeutic management of the case. These other things, though, are all dependent upon the primary collection of facts in sufficient number and variety, accurately determined. If the data of departure be false or incomplete, the whole course of the subsequent procedure will be vitiated.

The validity of our conceptions and inferences, once the facts are established, will depend upon our powers of reasoning, and our ability to compare and to experiment, but there can be but

little hope for valid conception and justifiable inference where the perceptive power is deficient or has been inadequately applied.

It has taken thousands of years to elaborate the methods of clinical examination which are here demonstrated; what strikes one forcibly is the very large proportion of them which have been worked out in the recent past, the direct consequence of the application of the experimental method to clinical science. The results which have been achieved will surely give us increased confidence in man's powers in medicine. As the percepts which can be gained concerning patients grow ever more numerous and complex and our intellectual grasp of physiological function and pathological disturbance becomes continually greater, who will dare to place a limit to the physician's capacity to understand and to master phenomena? I, for one, am unwilling to set one; on the contrary, the history of medicine, especially in the decades just behind us, gives us every reason for assurance that problems of life and mind, of health and disease, of diagnosis and cure, now so dark and so intricate that in many they awaken only despair, will ultimately be solved by scientific physicians. If the past is, as we think it, an index to the future, we need not hesitate to assert with regard to medicine, that, in time, through the further application of the scientific method, *We shall know; we shall be able to predict; we shall gain the power to control.*

Original Articles.

THE MEDICAL TREATMENT OF GASTRIC ULCER AND HYPERCHLORHYDRIA.*

BY FREDERICK C. SHATTUCK, M.D., BOSTON.

WITHIN the last few years I have modified my treatment of gastric ulcer. For some fifteen years before that it was my rule to starve every case in which the diagnosis was clear, for at least fourteen days if possible. In one case of apparent duodenal ulcer in a man of middle age, seen with Dr. C. E. Stedman, rectal feeding was so well borne that stomach rest was carried on for upwards of thirty days. The symptoms never recurred. The principle is, of course, simply that of rest, peristalsis and acid secretion both ceasing, certainly in great measure, in the empty stomach.

I underwent the treatment myself seven years ago, my fast being limited to thirteen days, as rectal feeding produced so much discomfort that I was allowed to give it up. Several years later more or less constant misery from hyperchlorhydria, without bleeding or any other positive sign of ulceration, drove me again to take advice from my brother, Dr. G. B. Shattuck, and Dr. F. Forchheimer of Cincinnati. The experience gained by following their wise counsel has, I know, been of much service to me, and I think I have been able to make it so to others.

Hyperchlorhydria is very common, greater or less in degree, intermittent, or more or less constant; far more, as I believe, an expression of faulty innervation, the result of worry or fatigue, than of mechanical irritation or stimulation of the mucous membrane. Diagnosis does not need the stomach tube.

The temporary relief of symptoms by food alone in the milder cases, the prompt relief even in severe cases which follow sodic bicarbonate in sufficiently large doses, one or two teaspoonfuls, clinch the diagnosis. Gastric flatulence, more or less general depression, sometimes very great, with sensitiveness to cold, are suggestive symptoms. Pyloric spasm, as characteristic as it is uncomfortable or even painful, — I have known it to start the sweat like angina, — is fortunately not very common. It receives scant or no mention in most of the books, possibly because patients cannot accurately describe it without help. As I have experienced it, the sequence of events is as follows:

Usually when comfortable, perhaps asleep, largely irrespective of meal time, an uneasy sensation at the epigastrium suggesting distention of the stomach appears suddenly. This sensation increases in intensity, saliva begins to flow, the face and ears feel flushed, yawning and a feeling approaching nausea are also common. Within one or, at the most, three to five minutes, these symptoms recede again. Wind usually escapes from the stomach upward, and relative, more often absolute, comfort returns. Attacks vary in severity.

Experience with patients leads me to believe that pyloric spasm is more common than mere reading would lead one to expect. I crave your pardon for so far indulging in seeming egotism. It is a safe rule to avoid inflicting one's infirmities on others, — "to suffer and be still." But the physician who suffers from a malady ought to learn something from his personal experience and be willing to sacrifice his privacy for the sake of benefiting others. Hyde Salter, Morrill Wyman, Oertel and Ralph are names which occur to me in this connection.

There are few conditions more gratifying to treat than hyperchlorhydria. An alkali, only palliative in the more severe and persistent cases, is practically curative in those which are more transitory, relieving the distress while the nervous system recovers from its fatigue or otherwise rights itself.

Soda mint tablets, I believe, would be better without the mint, and must be taken by the dozen, save in the mildest degrees. It is therefore better to take plain bicarbonate of soda dissolved in plenty of water.

Magnesia, either in powder form or the so-called milk of magnesia, is excellent if there be constipation. But in the higher degrees of hyperchlorhydria the large quantity of magnesia required as an antacid is apt to act too freely on the bowels.

The diet should largely exclude salt, the source of HCl. Condiments should be absolutely excluded. Milk, pure or in combination, or prepared in various ways, is practically always

* Read before The Massachusetts Medical Society, June 13, 1905.

admissible or even desirable, and I often allow soft boiled, dropped or scrambled eggs unless experience forbids. Meat and even fish are to be temporarily excluded, say for a few weeks, and then permitted only sparingly and tentatively.

Diet and such mode of life as tends to restore a more or less tired nervous system, which is apt to be a causative factor, will generally work a cure without the aid of medicine. In severe cases from one-half to two teaspoonfuls of subnitrate of bismuth before meals, seem of distinct benefit, probably acting as a protective coating to the gastric mucous membrane against the food, and thus diminishing the activity and secretion of the peptic glands. In these large doses the drug is not constipating. The microscope shows that the drug has a crystalline formation, which may account for its failure to constipate.

In cases where there is doubt as to whether hyperchlorhydria is complicated by ulcer, the above treatment is applicable, save perhaps that the diet may be made rather more rigid; and this is true also of cases in which ulcer is probable but in which bleeding has never occurred, or at all events has not been recent.

In cases presenting marked and characteristic ulcer pain or coming under treatment just after hemorrhage, it is desirable to give the stomach rest for several days. Morphia is to be given hypodermically in such doses as may be required to allay pain. It may also be given in smaller and repeated doses by mouth absorption either for restlessness or to blunt an appetite which is not then safe to indulge, if circumstances seem to call for it. The drug also quiets peristaltis and diminishes glandular secretion.

After three or four days of exclusive rectal feeding, milk and lime-water, a dram every fifteen minutes, can be given by the stomach with daily increase in the amount, lengthening of the interval, or both. In ten to fourteen days milk toast, junket, rice with cream and sugar, baked potato, macaroni, blanc mange and the like may be added and rectal feeding omitted. I believe in these cases abstinence from meat should be prolonged for at least three months. Food containing starchy things, such as unstrained oat meal, seed fruits and the like, are also to be excluded lest they irritate the raw surface. The principle is simply to select such food as demands the least stomach digestion and to avoid irritation as far as may be. Bismuch is desirable until full and ordinary diet has been resumed, say three to six months. It here serves a double purpose, diminishing secretion and also mechanically protecting the raw surface from both food and such gastric juice as is formed.

The applications of the principles which I have tried to set forth above have given results in every way satisfactory to me, and I think also to my patients who have followed them out. A recent case in point may be briefly sketched here. An athletic young man without antecedent dyspepsia had profuse gastric hemorrhage in November, 1904. About two months later he went to New York, omitted his bismuth, and ate irregularly and too largely, although he observed qualitative restrictions. After a week or so he began to have severe pain in the pyloric region with tenderness, came home suffering greatly in the cars and went to bed. Pain and localized tenderness were then more or less constant, excited and increased by examination, persisting in spite of the simplest nutriment, requiring from one to three and a half grains of morphia a day for relative relief. He was then put on a forty-eight-hour fast. At the end of this time the pain ceased and convalescence was uninterrupted. He recently came to my office and stated that he should not know that he has a stomach. I believe the persistence in proper diet and bismuth will prevent recurrence, or at least go far to do so. There is, in my opinion, in certain quarters, far too strong a tendency toward operative interference in gastric ulcer. Hyperchlorhydria is a frequent accompaniment of the lesion, if it is not indeed a causative factor. Will operation restore a proper acidity? Will it tend to prevent recurrence? There are other causative factors which are not easy to understand. Why, for instance, does peptic ulcer near the pylorus prefer young women, especially domestics? Why does peptic ulcer prefer the duodenum of men, ten or more years farther advanced in life? Why is peptic ulcer more common in some places than in others, without any notable variation in the customs and mode of life? Why more common in Boston, for instance, than in Baltimore? Whatever the cause or causes of these facts they are not such as the surgeon's knife can remove along with the ulcer or through gastro-enterostomy.

Pyloric stenosis, gastric stasis and dilatation due to the cicatrix of an ulcer are curable only by operation. We know that permanent cure follows purely medical treatment of peptic ulcer in say 50% of the cases. Proof is lacking that surgery can do better. And I personally can see no reason in the nature of things to lead us to believe that it can do better. That an operation can be done with impunity as far as life is concerned does not warrant its performance. Moderate hemorrhage from an ulcer does well under starvation and morphia. So does profuse hemorrhage, oftentimes. It may be a nice question after large or repeated bleeding whether to put salt solution into a vein or under the skin. The slower the circulation the more likely is clotting to occur at the source of bleeding. We have to balance the risk of death from the blood loss which has already taken place against that from the possible starting up of fresh hemorrhage. So delicate may this balance be that error of judgment must sometimes occur. I cannot see much room for surgery in the treatment of ulcer hemorrhage. Mild cases do well without surgery. A severe case would seem to have a better chance without the additional load of an operation. Cases in which pain is so persistant, and hemorrhage so frequent and recurrent in spite of medical treatment, as to justify operation, on the chances as it were, are, as far as my experience

goes, excessively rare. The only case in which I have advised operation for gastric hemorrhage was in a young female domestic,. No ulcer was found, the blood coming from the whole mucous membrane. She died.

To sum up, cicatricial contraction at or near the pylorus causing dilatation, and perforation, are the only features of peptic ulcer which seem to me to clearly demand surgical treatment in the present state of knowledge. I therefore prefer that further knowledge on this point be gained on the patients of others rather than on my own.[1]

DISCUSSION.

DR. E. G. CUTLER, of Boston: I agree perfectly with what Dr. Shattuck has said, except in a few minor particulars as to the question of diet and alimentation; and as applying to what he said, I will read a few words which I have put together on the subject.

In the first place, one of the essentials of the treatment is rest in bed, and the time ought to be from three to four weeks. The patient may be on the lounge the fourth week, the time that he is there being gradually increased daily, if borne well. The patient may walk about the fourth week, but should rest on the lounge after each chief meal, for a period of one or two weeks longer, when he may go about as usual, but he must not bend forward at work nor exert pressure on the epigastrium for months.

As to diet, I agree with Dr. Shattuck very nearly. I should say, however, that the first week the diet should be largely milk, beginning with small doses every hour, with water as a beverage, up to two or three pints, the amount of milk and times of taking it being gradually increased until six ounces are taken every two hours. The second week, if nausea and pain or discomfort are gone, some of the cereal preparations, well-cooked wheat, or strained barley or oatmeal, or somatose may be added to the milk. The third week the white of egg, and finally the whole egg may be added to the milk and cereal. The fourth week boiled chicken, broiled sweetbread, baked potato, and bread and milk are added. After this the ordinary diet can be taken, except that no raw fruits, pastry, salads, or coarse vegetables, and I should add beef, should be taken for months, or perhaps for several years. I believe that broths and soups had better be omitted until the patient is well, as they tend to increase the HCl production. It is my opinion that the majority of patients do better by giving exclusive rectal alimentation the first one or two days. A few years ago I advised giving this alimentation for a longer period. It seems to me, howeyer, that you do all you want in two days, or at the most three days, and when six ounces of milk are being taken at a time, the enemata may be omitted. The enema consists of raw milk, six ounces, one or two raw eggs and half a dram of salt. The enema to be given once in six hours, and one cleansing enema a day to be used.

Bismuth, in some cases where the pain is persistent, or tenderness present, is advisable, given as indicated by Dr. Shattuck. Another thing which I find of service is olive oil (advised by Conheim), one-half ounce daily, in the morning, and one to two teaspoonfuls in the middle of the day and the evening, it being very effective in acidity and pain. Time and again I have given that, with no other treatment except care in diet, in patients with gastric ulcer, and time after time the symptoms have disappeared without further trouble. I also frequently use twenty grains of Carlsbad Sprudel Salts in a little water before each meal. It seems to me to diminish the acidity.

The milk diet should be kept up as long as the Boas examination of the feces reveals occult hemorrhage (guaiac and aloin tests). I have also obtained good results from iron in some form, beginning at about the end of the third week of routine treatment.

For hemorrhage, it has seemed to me that I got more good following out the treatment of Einhorn, who recommends using a syringeful of adrenalin chloride, 1–2000, twice daily, or giving 15 drops of the same solution by mouth, three times daily. I have used this only two or three times, but it seems to be of distinct value. In cases of great weakness infusions of normal salt may be used. Profuse hemorrhage recurring at short intervals, or frequent small hemorrhages, I believe demand surgical interference. I also believe that persistent pain after taking food, and tenderness of the epigastrium, which does not yield, to the treatment of rest and diet in three weeks' time, should be turned over to the surgeon.

In looking over my figures, I find that I have had sixty-five cases of gastric ulcer where the diagnosis seemed to be very certain, and where good records were kept, and of that number sixty-one were of the class that perform arduous labor, and four were not; three were doctors who were in the very best of circumstances, and one was a lady patient who was equally well placed. So far as the nationality was concerned, eighteen were Irish, one German, ten Canadian, twenty-nine born in America, nineteen of whom were of foreign parentage, three English, two Swedish, two from Scotland, and one not given.

As far as results were concerned, five died; there were twenty-seven who were apparently what you would call well when leaving the hospital; four were improved; two much improved; and two not improved at all. I tried to keep trace of these people by postal cards, etc., but as they belonged to a class that is more or less floating and unstable, this was very unsatisfactory. Some weeks ago I wrote letters to every person on this list, known to be living, and got only six answers. Thirty-five letters were written, the dead-letter office brought back ten of them, six answered, and the others, presumably, did not take the trouble to answer, or else they got lost in some way. One replied by postal

[1] For an excellent analytical study of the Surgery of Gastric Ulcer, see SCARF, BOSTON MEDICAL AND SURGICAL JOURNAL, March 30, 1905.

card, as follows: "I remained well for two and two-thirds years, then I had one slight attack last December (1904)." Another answered: "I remained well up to March, 1905." (That was when I last heard from that patient, and covered a period of five years.) There was one case of hour-glass stomach, which was operated upon, and the patient remained well up to nineteen months after the operation, and the understanding was that we should be informed if anything happened, and as nothing has been heard since then, the patient is probably well. One case where gastrotomy was performed has remained perfectly well for two years. Another case which was operated upon, I saw about a year ago. This was one of the cases which left the hospital as "unimproved." He said he had more or less bad symptoms for seven months, when he was operated upon at the Carney Hospital by Dr. Munro, on Jan. 7, and on March 13 he was very much improved.

The trouble with all statistics, as far as gastric ulcer is concerned, is this, — that the cases occur amongst a class of people who are rather floating in their residence, and relatively irresponsible, and we cannot carry out what we would like. They do not obey directions very well, unless under observation in the hospital, and are therefore unsatisfactory to treat outside.

DR. M. P. SMITHWICK, of Boston: In regard to this paper, I looked forward to it with great pleasure and listened to it with great interest, and as far as local medicinal treatment goes, would give just about what Dr. Shattuck believes in giving. But my belief is that the following statements in regard to hyperchlorhydria, or in regard to hyperacidity, in which hydrochloric acid is increased although associated with other acids, are facts:

First: It is fundamentally a neurosis; it may not be a single neurosis, but a combination of neuroses. Hyperesthesia is always present and clinically is often mistaken for hyperacidity. I see no reason why a hyperchlorhydric stomach, for instance, with a diminished motility, and perhaps altered blood supply, where for hours fermentation goes on and which is filled with bacteria, should have a normal lining. Different grades of gastric catarrh are often present in hyperchlorhydric cases, but improvement in the former is followed by increase of the latter. Increase or decrease of glandular elements reported may result from nervous influences, as has been suggested, for ulcer, the latter being possibly due to a so-called ganioneurosis or trophoneurosis.

Second: Clinically, hyperacidity is often with difficulty distinguished from gastric ulcer, and should suggest its possible presence. In thirteen cases that I have examined while ulceration was active, acidity was increased in two, high in one and always less than average in ten. Successive examinations showed marked variation in acidity, all specimens being obtained one hour after the Ewald test meal. One of my cases, a trained nurse, with an ulcer in the pyloric ring, demonstrated at operation, vomited after one or more meals daily for ten years, never experienced pain until a few months before operation, and never noticed blood in vomitus. Another case, with a large chronic ulcer near the pylorus, demonstrated at operation, had never vomited or experienced pain, except heart-burn. Stasis had been demonstrated by another physician two years before operation, and, judging from the history, had caused symptoms four or five years. The diagnosis was made a year before operation. The pain and tenderness in hyperacidity are usually less localized than in ulcer, and usually the first is eased by food, but the most careful study clinically and the most careful search for blood in gastric contents and feces may leave us in doubt. Every one of large experience has had such doubt suddenly cleared up by hemorrhage or perforation. The lesson is to treat doubtful cases as ulcer. Cases of so-called latent ulcer may be rare, but atypical ones are common.

Third: Clinically, hyperacidity usually precedes ulcer, and, indeed, usually succeeds it also.

Fourth: If we were to examine normal people we would find that there is a decided variation in the acidity from time to time, and if we examine neurasthenics or neurotics, we find still greater variations.

The suggestion I would make for the treatment of these cases is treatment of the underlying neurasthenic or neurotic condition. What is needed is to stop getting exacerbations of acidity, and if we can do this the symptoms usually decrease, and the patient can be changed over from a case of gastric neurosis to an ordinary neurasthenic or neurotic. Then he can live in comparative comfort, and in years he may become a comparatively normal individual.

In regard to the treatment of gastric ulcer, I hesitate to say anything, after those of so much greater experience; but I will say that my experience leads me to advocate at least ten days' rectal alimentation, and when food is given by mouth, to prefer milk pancreatized until decidedly bitter. Liquids should be continued several weeks and resumed as soon as gastric distress returns. Absolute rest three weeks.

In the diagnosis and treatment of gastric ulcer the stomach tube should be used only when necessary. Perforated gastric ulcers or those causing a degree of stenosis of the stomach incompatible with nutrition, belong to the surgeon. Excision of the ulcer is a rational procedure, and is the only one that can ever permanently displace medical treatment. The time may come when medical treatment of chronic ulcer will be persisted in only after exploration has shown excision to be impracticable. Mutilating operations, as pylorectomy and gastro-enterostomy, can never be operations of choice.

I would like to say one thing before I leave the subject, and that is, in the study of a digestive neurosis we should search for the cause. If it can be removed we may hope for a cure. Treatment of the local conditions is often necessary, but is only palliative. And here I want to speak of the cases of two young neurotic girls with

strong maternal instincts. After marriage the first trouble was double gonorrheal tubes, the next was removal of these tubes, and the next was severe hyperchlorhydria which has resisted all treatment, and which will probably continue to resist treatment for some time to come. Saleratus will not cure such cases as these until there has been sufficient time elapse for them to regain nervous equilibrium and to see a baby without envy, and sufficient time for them to learn that other women have their troubles.

In the majority of cases you will find that there are nervous causes; and, fortunately, they can be removed occasionally. More frequently the sufferer can only be helped to a less depressing outlook.

My last and most earnest word will be in regard to prophylaxis. When the parent brings us a child exhibiting neurotic tendencies we should do more than prescribe symptomatic treatment, — we should strive to convince the parent that proper environment and education are the best antidotes for bad inherited tendencies. If the physician does his duty, the formative years in such cases will be dominated less frequently by family tradition, paternal ambition, and chance.

Medical Progress.

REPORT OF PROGRESS IN ORTHOPEDIC SURGERY.

BY A. H. BRADFORD, M.D., BOSTON.

ARTHROPLASTY, CLINICAL AND EXPERIMENTAL.

One of the most brilliant contributions to orthopedic surgery comes from the hands of Dr. Murphy,[1] of Chicago, who reported a successful case of operation for ankylosis of the hip joint treated by arthroplasty, or the interposition of a flap of fascia lata between the head and acetabulum which had become ankylosed after injury. A year after the operation there was complete function of the joint and normal motion. The method has been applied also at the knee joint by Dr. Murphy with success. Previous attempts of this method at the knee joint have met with but little success. These failures, in the opinion of Dr. Murphy, have been due to insufficient or defective exsection of the synovial membrane, capsule and ligament; insufficient interposition of fat and aponeurosis, or of fat and muscle, between the separated bony surfaces; infection, and sensitiveness to pain on motion after operation.

Dr. Murphy believes that where osseous union has existed it is important to disconnect the bones in as nearly their normal line of union as possible. This is best done by a narrow chisel. In the shoulder and hip a chisel can be used to separate the bones so as to outline the line of fracture in such a way as to secure the normal formation of head and cavity as far as possible.

[1] Transactions of the American Surgical Association, vol. xxii, 1904; Journ. Am. Med. Asso., May 20, 1905.

All bony prominences should be removed, like the coronoid process or the olecranon process. The soft parts should be liberated thoroughly. The muscular aponeurosis with fat, Dr. Murphy thinks, makes the best interposed tissue. If aponeurosis cannot be found, muscle and some fatty tissue should be substituted.

The development of a hydroma from pressure of fatty tissue should be the uniform result. If there is muscular contraction it should be overcome by Buck's extension.

In the operation upon the hip a U-shaped incision was made five inches wide, with its base upwards, beginning four inches above the trochanter and extending downward two inches. The trochanter was exactly in the center of the U. The incision was made through the skin, superficial fat and fascia lata, and these tissues were dissected upward as one flap.

A long, curved needle threaded with heavy silk was passed around the base of the trochanter, beneath the muscles attached to it, and by means of this carrier a chain-saw was brought into position. The trochanter was sawed off and retracted upwards. The capsule of the joint was next incised and separated from the ilium all the way round. The attachment of the gluteus maximus was not disturbed.

The bony tissue filling the acetabulum was chiseled free from the latter by following round its margin with a carpenter's curved chisel an inch and one half in diameter. The chisel each time was driven in obliquely towards the fossa acetabula, the object of this being to make the new femoral head as nearly spherical as possible. When the chiseling process was completed the new head was entirely separated from the sides of the acetabulum, and was attached only at the bottom by a narrow bridge of bone. This bridge was fractured by forcible abduction of the limb, after which the head was dislocated from the cavity by external rotation of the thigh.

The shape and contour were almost exactly those of a normal femoral head. The bony projections were removed by a bone-cutting forceps. The fascia lata which formed a part of the original U-shaped flap was now dissected away from the subcutaneous fat tissue down to its base, while the vessels entered to supply it with blood. The flap of fascia was then drawn down under the head of the femur, and carefully fitted into the acetabular cavity to form a complete lining. The under surface of the flap one half an inch from the edge was sutured to the joint capsule with interrupted catgut suture.

The head of the femur was returned to its normal position. The free border of the flap was now sutured with interrupted catgut suture, and the capsule attached to the neck of the femur.

The flap was large enough to cover the head completely, and to come on to the neck without tension. The great trochanter was brought down to its normal position, and accurately secured. The skin flap was replaced. The limb was placed in a plaster cast after stretching.

TREATMENT OF BONE CAVITIES.

In commenting on Mosetig Moorhof's method of filling bone cavities James E. Moore,[2] of Minneapolis, reports success in a number of cases, and writes as follows:

The bone cavity must be dried and sterilized, and if much oozing is to be expected it is essential to provide for some temporary drainage by strands of catgut.

The method can be used for tubercular cavities where there is no mixed infection, in chronic bone abscesses where the cavity is sterile; but in tubercular cavities with mixed infection great care is needed to secure asepsis.

Free access to the cavity is necessary, and for this purpose the bony covering should be sufficiently removed. All diseased or necrotic tissue must be removed, and the cavity dried and disinfected. An adrenalin solution can be used if oozing is persistent. Moore prefers for disinfection 95% carbolic acid followed by alcohol. If the Esmarch bandage is applied, and the cavity thoroughly dried, it can be filled with acid, which may be left for several minutes. This can be used in place of Moorhof's electric hot-air blast.

The cavity is then poured full of the melted material, consisting of twenty parts of iodoform, forty parts of spermaceti, and forty parts of oleum sesami. These ingredients are slowly heated to 100 C. and allowed to cool, forming a soft solid. When using it, it is heated to 50 C. and constantly stirred. At this temperature it can be poured into the cavity, where it solidifies. The wound should be closed.

CASE OF BONE TRANSFERENCE.

The writer, Thomas W. Huntington,[3] of San Francisco, for the purpose of supplying the defect caused by the removal of a portion of the tibia for osteomyelitis, transferred a portion of the fibula, which was sawed off at a point opposite the lower end of the upper tibial fragment.

The divided end of the fibula was firmly planted in a cup-shaped depression of the tibia. Union was slow, but solidification was noted, finally, six months later.

The patient was then able to walk by means of an apparatus, but as the weight-bearing condition was not sufficient, the lower end of the fibula was transferred to the lower fragment of the tibia. A growth in the diameter of the transferred fibula occurred, and the eventual result was, that the boy could play ball, engage in sports, and needed no support.

RESECTION OF THE ACETABULUM FOR TUBERCULOUS INFLAMMATION OF THE HIP JOINT.

Bardenheuer [4] reports his experience in twenty-six cases of resection of the acetabulum for tuberculous and osteomyelitic inflammation of the hip joint.

[2] Journ. Am. Med. Asso., May 20, 1905, p. 1582.
[3] Annals of Surgery, February, 1905.
[4] Festschrift, Eröffnung der Akademie für Praktische Medizin, Cologne.

The patient is placed on the well side; an incision is made from the junction of the middle and posterior third of the iliac crest forward, following along the crest, dividing the skin, passing the anterior superior spine, and forward along the ramus to the ilio-pubic tubercle.

Both the inside and the outer side of the pelvic bone is separated from the adjacent muscular bodies, the periostium being removed as far as possible, using either a raspatorium or a knife. This is done on the outer side as far as the joint and the upper border of the ischiatic notch, and on the inner side backwards as far as the linea innominata.

A curved forceps carrying a Gigli saw is then passed from behind on the outer side through the ischiatic notch above the pyriformis into the small pelvis, and passes along the inner side of this upwards into the larger pelvis. The ilium is then sawed through. The ramus of the pubes is then cleared of soft tissues and sawed with a Gigli saw, and in the same way the saw separates the tuberosity of the ischium from the rest of the fragment of the pelvis, care being necessary to avoid injury to the vessels and nerves. The femur is then sawed off below the tip of the trochanter, and the whole joint removed. It is better that this should be done where it is possible than to remove the head of the femur separately from the acetabulum.

After-treatment in these cases requires time; in tuberculous cases from four to six months. The limb should be placed in a position of slight abduction.

Bardenheuer concludes that the total resection of the acetabulum is not a dangerous operation, but requires great skill. It is indicated in all septic inflammation of the acetabulum, and in tuberculous hip joint affections where the acetabulum is so involved that superficial curetting will not be sufficient.

Shortening of the limb is not especially influenced by resection of the acetabulum. The operation is to be used as a life-saving measure where other means fail.

TENDON TRANSPLANTATION.

Lange,[5] in a remarkable paper before the second Congress of the German Orthopedic Association reports his results in tendon transplantation.

He presents pathological specimens showing the fact that silk thread may be used to supplement tendons, which becomes surrounded by fibrous tissue, forming a true tendon.

He reports a few cases of failure, from sloughing out of the inserted thread. In twenty-five cases strong silk cord was used to supplement the quadriceps femoris, and in seven patients a single hamstring muscle was used, and in four of these the patients were able to walk without apparatus.

In nineteen other cases two hamstrings were available, and in all of these the ultimate result of a useful limb, without the need of apparatus, was gained.

[5] Transactions of the Ger. Orth. Soc., 1903, p. 16.

LATERAL CURVATURE.

At the fourth General Congress of Orthopedic Surgeons[6] the subject of scoliosis was carefully considered.

Lovett, of Boston, showed some experimental investigations of the movements of the lateral column in normal spines. The experiments were made upon fresh cadavera, with the pelvis immobilized, and controlled by observations on models.

These experiments confirmed the statements which have hitherto been made to the effect that the lateral inclination of the spine is always accompanied by a rotation of the vertebral bodies with projection of the ribs on the concave side. This is attributed by Lovett to an instinctive attempt towards the re-establishment of the center of gravity interfered with by the lateral inclination.

In the report of the proceedings it is stated that in addition to this cause of the rotation the shape of the articular facets and the structure of the vertebral column itself are factors which cannot be neglected.

Schultis at the same meeting presented clinical results in the study of 1,140 cases of lateral deviations of the spine. He classifies scoliosis as, first, deformities due to primitive abnormalities of the vertebræ; second, due to a secondary anomaly of the vertebral column, that is, lesions of the skeleton, of the muscles, and of the nerves. He was able to show, through a series of tracings, the direction of the deviation according to the age of the patient, their relation, frequency, their tendency to increase or to remain stationary.

Schanz was able to find in scoliosis only the resulting mechanical change from an anomaly of the superimposed weight of the spine. The question of growth or age is only important in its relation to the excess of superimposed weight.

Riedinger accepted the theory of Schanz, but thought it was too rigid, and believed that there were variations.

SACROLUMBAR ARTICULATION.

Ludloff presented, before the meeting of the German Orthopedic Society, a paper on the anatomy of the sacrolumbar articulation, and showed that at the level of this articulation, and a little outside of it, a considerable hiatus exists, and posterior arches, which are slow in ossification.

There is, therefore, here a region of diminished resistance, and slight falls may determine lesions to the vertebral canal from which persistent neuralgias may follow, the cause of which is often obscure.

SACRO-ILIAC ARTICULATION.

Goldthwait and Osgood presented an interesting paper[7] on the anatomy of the sacro-iliac articulation, claiming that laxity of these articutions, which are known to be developed in women at the time of childbirth, may also be developed in the male, and give rise to symptoms of pain and disability which may be aided by mechanical means of spinal fixation.

[6] Revue d'Orthopedie, July 1, 1905, p. 370.
[7] Published in the BOSTON MEDICAL AND SURGICAL JOURNAL, May, 1895.

THE REGENERATION OF NERVES.

Spitzy[8] reported a number of experiments on the regeneration of the crural, perineal and tibial nerves, and the grafts of the trunks of one into the other. After four months the regeneration of the perineal nerve by the tibial is complete in a dog.

In a child the paralyzed perineal nerve was divided and inserted in a portion of the tibial. After six months a regeneration almost complete had been obtained. Massage and electricity were also employed.

SUTURE OF THE BRACHIAL PLEXUS IN BIRTH PARALYSES OF THE UPPER EXTREMITY.

Kennedy[9] is in favor of early interference in paralyses of the upper extremity in order to avoid as far as possible secondary degeneration of the nerve trunks.

An oblique incision is made from the external border of the mastoid to the junction of the middle and external third of the clavicle. After division of the superficial aponeurosis, and the platysma the omohyoid is drawn aside, the lower scalenus is found, which serves as a guide to the brachial plexus. All cicatrices and abnormal nodosities at the junction of the fifth and sixth pair are dissected away. Fine sutures are used, and the head drawn towards the affected side to diminish the tension.

The operation has been done three times: The first on a child of two months of age, with a recovery nine months after operation. The second case was done upon a boy of fourteen years, and the result was less satisfactory, there being no improvement thirteen months after the excision of the cicatrix. The third operation was done on a child of six months, a recognition of degeneration having already developed. Twelve months afterward Faradic excitability was to be found.

TREATMENT OF ANTERIOR POLIOMYELITIS BY NERVE TRANSPLANTATION.

Spiller and Frazier[10] report an operation proposed by Spiller and performed by Dr. J. K. Young, in a child with paralysis of two years' duration.

An incision 10 cm. long was made downward from the head of the tibia, including the skin and superficial fasciæ. The deep fascia was divided on a grooved director, and the peroneal nerve exposed, and by separating the peroneus longus muscle three divisions were found: First, the bundle of nerves supplying the upper part of the anterior tibial; second, the anterior tibial; third, musculocutaneous nerves. An upper division was taken, of which there were four or five branches. The external division, the musculocutaneous, was perforated, and the former united to the outer side of the latter by fine catgut sutures.

[8] Revue d'Orthopedie, July 1, 1905, p. 374.
[9] Brit. Am. Journ., 1903, p. 208.
[10] Journ. Am. Med. Asso., Jan. 21, 1905.

Care was taken to injure the musculocutaneous nerves as little as possible, and the branches of the nerve which supplied the anterior tibial muscle at its upper part were pushed through the incision in the musculocutaneous nerve without any attempt to separate the nerve fibers from the sheath. Small instruments were used, and the nerves were handled as little as possible. Tension on the nerves was avoided; the deep fascia was not closed with sutures; the skin was united by interrupted sutures. An antiseptic dressing and plaster bandage were applied. The operation was done on Dec. 4, 1902, and the child shown two months later before the Philadelphia Neurological Society.

Some improvement in the movement of the anterior tibial muscle was observed. At the present time the improvement is decided. The gait is nearly normal, and the child can draw up the inner side of the foot almost with normal power.

A similar case was operated upon by Frazier in a child of four, with a slight amount of gain.

A similar operation was also performed by Peckham in 1900, with success. This surgeon divided the healthy nerve fibers and united them with the degenerated nerve fibers. In Peckham's case paralysis had lasted for ten years, and at the end of six weeks improvement was to be observed.

CONGENITAL DISLOCATION OF THE HIP.

Heusner [11] showed the society at Barmen a fetus with congenital dislocation of the left hip which presented the following characteristics:

The cotyloid cavity was in normal position, but less deep than on the other side. The cotyloid rim was less prominent above and behind; the capsule was stretched, the round ligament much thinner than the other side; the head larger.

In a second fetus of five months a double luxation of the hip was found. The cotyloid cavities were flattened somewhat behind, and the round ligaments lengthened.

The author attempts to explain the greater frequency of luxation in females by the abduction of the thighs, owing to the persistence of the vaginal opening; while in boys the union of the perineal lips brings the lower extremities, even in the second uterine month, together.

Heusner agrees with Kirmission that at the time of birth, and even some time afterwards, there is no actual luxation, but the capsule is relaxed, and this permits a shortening and lengthening of the limb.

On the first attempt at walking the displacement is aggravated. Radiographs show in early cases but little loss in depth of the cotyloid cavity.

Bethe,[12] of Strasburg has proved that on section of the peripheral nerve trunk the distal portion can regenerate without connection of the central stump. Long pieces of the sciatic were excised, and the central stump was transplanted, preventing the possibility of any subsequent union with the distal trunk. He found that the myelin sheath and neurofibrils, as well as axon, regenerate. The regenerated nerves are capable of conducting impulses, and if the regenerated fiber is cut again the peripheral portion degenerates to the periphery, but the central portion, unconnected with the center or periphery, remains for a long time undegenerated.

The regeneration is not due to any ingrowth of the fibers from the branches of neighboring nerves, but through the activity of the neurilemma cells. Regeneration is not due to the end organ, for the sciatic has been cut high up, and also in the popliteal space, and the two ends sutured into a ring, regeneration still occurring. But autogenous regeneration appears to be possible only in young animals.

These experiments repeated what had been accurately observed and described by Vulpian and Phillipeaux in 1859, but not confirmed at the time by other observers.

[11] Zeit. f. orth. Chir., Bd. x, Hef. iv, 1902, p. 51.
[12] Journ. of Am. Med. Asso., Jan. 28, p. 296.

Reports of Societies.

MASSACHUSETTS MEDICAL SOCIETY.

MEETING, JUNE 14, 1905.

A SERIES OF DEMONSTRATIONS ILLUSTRATING METHODS OF DIAGNOSIS IN MEDICINE AND SURGERY, AND ALSO THE CAUSES AND LESIONS OF DISEASE.

THESE demonstrations were organized by Prof. William T. Councilman, and the following account thereof has been prepared. Dr. Barker's address was introductory to the demonstrations.

In the past twenty-five years the advance in knowledge of disease has been greater than in any previous century. This increased knowledge has been applied to the problems of disease which are presented to the clinician, and has given greater power in the treatment of disease. Much of the mystery surrounding disease has been removed and medicine is now approaching the status of a science. The increased knowledge has been due to methods of investigation. The methods are based on the fundamental principle that knowledge is derived from observations by means of the senses, and the methods represent extensions of the senses.

It was thought by the authorities of The Massachusetts Medical Society that it would be of advantage to show at this meeting a number of these methods in active operation. The success of these demonstrations has been due to the active work of the men in charge of the different sections. They have involved a great deal of thought and care in preparation.

1. DIAGNOSTIC METHODS EMPLOYED IN TOXICOLOGY.

The exhibit in toxicology comprised the distillation of phosphorus from matches, showing the readiness with which phosphorus can be procured by a would-be suicide, and the fact that for a few pennies a person can secure enough of this dangerous substance to produce death.

There was shown the deposition of lead upon platinum cones, from urine, which had previously been destroyed with nitric acid, by electrolysis, demonstrating with what readiness the presence of lead in such organic substances as urine can be detected.

There were also shown the different spectra produced by blood which had been acted upon by different gases, such as carbon monoxide and sulphuretted

hydrogen, by such poisons as acetanilid and chlorate of potash, and by strong acids, all of which are of great importance in the diagnosis of such intoxications.

There were shown the extraction of strychnia from solutions of the same mixed with calcium carbonate, by means of the automatic Soxhlet apparatus, which obviates the tiresome process of shaking it out with ether, using the separating funnel.

There was shown arsenical paper and the difference between arsenic and antimony mirrors, and a series of arsenic mirrors produced with the Marsh apparatus, and varying from $\frac{1}{1000}$ to $\frac{1}{10}$ of a grain.

All the ordinary poisons were on exhibition, as well as some of the crystalline precipitates produced by the alkaloidal reagents upon the alkaloids, such as atropine, cocaine and strychnine.

There was shown a ready method of demonstrating the presence of mercury and arsenic in organic mixtures, by which the entire process would be completed in a single test tube.

There was also shown a rapid method of filtering by which a mixed mass of sulphides or organic matter and metallic poison could be separated when sulphuretted hydrogen had been passed through the mixture, previously destroyed by chlorate of potash and hydrochloric acid, this exhaust filter being run by means of a new electrical pump made by the Boston Vibrator Company.

The demonstration was in charge of Dr. A. E. Austin, assisted by Dr. W. Dacre Walker and Mr. Myron W. Marr.

2. METHODS OF DIAGNOSIS IN DISEASES OF THE EAR.

The demonstration in otology consisted in the exhibition of methods of diagnosis by means of objective examination and sound tests, illustrated by patients selected for that purpose; the exhibition of apparatus for purposes of diagnosis, of charts giving the comparative symptomatology of various aural diseases and diagrams and solar enlargements of microscopic sections illustrating pathology.

The exhibit was in charge of Drs. C. J. Blake, Caswell and Wales.

3. DEMONSTRATION OF METHODS OF DIAGNOSIS IN SURGERY — DRS. J. B. BLAKE AND C. A. PORTER.

Dr. Blake's demonstration consisted of the demonstration of about fifteen patients, a considerable number of x-ray pictures illustrating fine points in surgical diagnosis, and the demonstration of a considerable number of x-ray negatives upon the illuminated screen kindly loaned by Dr. Francis H. Williams, and demonstrated by Mr. Fewkes of the Boston City Hospital. The patients illustrated glanders (with infection and reaction in guinea pig, microscopic slide and culture), intestinal obstruction, exploratory laparotomy, varicocele, hernia, severe compound fracture of legs, fracture of patella, of carpus; malignant disease of rectum, prepatellar bursa, lipoma, abscess, tuberculous ganglion, severe pes valgus, malignant disease of esophagus and gastrostomy, tuberculous peritonitis with ascites, and several other affections.

Dr. Blake was assisted by Drs. Howe, David Cheever, William Lane, Adams and G. Blake.

Dr. Porter's demonstration consisted of cases, photographs, pathological material, and some apparatus used in making diagnose. There were two tables covered with various fresh specimens of pathological material from surgical operations, the object being to demonstrate gross methods of diagnosis, — fibroids of the uterus; two knee joints, with amputation of them for septic arthritis; actinomycosis; tumors of the breast, etc.; fluid from spermatocele contrasted with hydrocele. Two patients were demonstrated with a gastrostomy, to illustrate the methods of diagnosis of diseases of the esophagus, swallowing of string for impermeable stricture; with demonstration of the various instruments, — bougies, sounds, etc., belonging to Dr. S. J. Mixter.

The clinical cases, numbering in all about twenty-five, showed numerous fractures of interest to the general practitioner, — old unreduced Colles's fractures, old unreduced dislocation and fracture of the upper end of the humerus, Pott's fracture, one united, one ununited, etc.; result after excision of the tibia for osteomyelitis; case of cured actinomycosis of the pleura and lung; idiopathic gangrene; symptomless hematuria; hydrocele; hernia; tumor of the testis; tuberculosis of the knee; caries of the cervical vertebræ; abscesses of the neck; spontaneous gangrene of hand; and two especially valuable demonstrations of advanced keloid following burns, etc.

About fifty photographs were arranged, with legends attached to each showing some of the commoner as well as rare surgical lesions, — various photographs of the two cases of keloid before and after operation; cases of cancer in special parts of the body; contrast photographs of the different varieties of hernia, exstrophy of the bladder, syphilitic diseases of bones; series of cases of carbuncle before and after excision; plastic operations; empyema, with characteristic enlargement of the terminal phalanges; some colored photographs, such as mesenteric thrombosis of the intestines; and an interesting series of the special infections, — anthrax, actinomycosis, glanders, tetanus, etc., — the special object of these being to illustrate the points which would enable one to make a differential diagnosis, and the results before and after operation.

So far as possible the fractures shown and the cases of bone disease were illustrated either by the x-rays or from prints.

Dr. Porter was assisted by Drs. William C. Quinby, Harry Hartwell, John Little, Channing Simmons and Charles Butler.[1]

4. METHODS OF DIAGNOSIS IN SKIN DISEASES.

In the section of dermatology, cultures and microscopic preparations of the various forms of vegetable parasites were demonstrated. The affections which these agents produce were illustrated by patients and by numerous drawings and photographs. A number of patients with scabies were shown to illustrate the method of diagnosis and to emphasize the prevalence of this affection at the present time and the difficulty of diagnosis in cleanly people. There were also shown a number of wax models illustrating this affection. Microscopic preparations showing various cutaneous lesions were also exhibited.

The demonstration was in charge of Drs. Bowen, White and Burns.

5. METHODS OF PHYSICAL DIAGNOSIS IN INTERNAL MEDICINE.

Cases were demonstrated as well as methods of diagnosis. Examples of the following diseases were shown:

[1] "Of my part of the exhibit, it seemed to me that the general practitioners were interested in the rare cases, such as the keloid, to some degree, but especially in demonstrations of the more common lesions, such as fractures, 'house-maid's knee,' and the scrtal tumors. Were such a demonstration to be repeated, I should advise more attention and care being given to an exhaustive showing of all of the common surgical lesions without much regard to the real rarities.

"The patients, on the whole, on finding that a great many other men and women were going through the same treatment, and upon payment of their railroad fare, and a small additional fee for their trouble, made no objection at the time or afterwards to their treatment. On the other hand, the absence of sheets and pillow-cases and the inadequacy of protection for the women, from an absence of screens, made the demonstration in the surgical department, as well as in some other rooms, appear to me a little wholesale, and more money, judiciously spent, would change for the better the entire aspect." — C. A. P.

Pernicious anemia in remission (2 cases).
Leucemia under x-ray treatment;
Plumbism;
Acromegalia;
Paget's disease;
Raynaud's disease;
Mitral stenosis (4 cases);
Mitral regurgitation (4 cases);
Aortic regurgitation (3 cases);
Congenital heart lesions (3 cases);
Tuberculous peritonitis;
Obstructed vena cava inferior.

This demonstration was in charge of Dr. Richard C. Cabot, assisted by Drs. N. W. Chandler of Medford, G. S. Hill of Marblehead, F. R. Jouett of Cambridge, J. C. Donoghue of Boston, F. P. Denny of Brookline, F. J. Foley of Worcester, J. J. Whoriskey of Cambridge, J. B. Hawes, 2d, of Boston, Merrick Lincoln of Worcester, W. C. Bailey of Boston.

6. DEMONSTRATION IN PATHOLOGICAL ANATOMY.

It was thought advisable to combine with this demonstration of methods the demonstration of preparations showing the lesions of the disease.

The demonstration in pathological anatomy consisted of a series of fifty framed bromide enlargements of microphotographs illustrating the pathological histology of smallpox, typhoid fever, cirrhosis of the liver, tuberculosis and certain malignant tumors, and a series of seventy-five paintings of lesions of bones and joints.

Besides this there were a large number of gross specimens preserved in Kaiserling fluid and mounted in gelatine, either in flat rectangular glass cells or under Petri dishes cemented to rectangular of plate glass. The microphotographs in many cases illustrate the finer histological points while the gross specimens showed in natural colors the gross appearances of the same lesion. These were displayed on eight large tables.

The demonstration was in charge of Dr. H. A. Christian, assisted by Drs. W. R. Brinckerhoff, E.H. Nichols, E. E. Southard, E. E. Tyzzer and S. B. Wolbach.

7. METHODS IN DIAGNOSIS BY MEANS OF X-RAY.

No especial demonstration of the technique of taking x-ray pictures was given because the different forms of apparatus were shown by the makers in the Exhibition Hall.

The demonstration of "The X-Ray in Medical Diagnosis" consisted of charts, plates, prints and skiagraphs, illustrating as much as possible of the following conditions:

1. *Head.* (1) Trauma, and (2) abscess of brain. Various pathological conditions in the antra.
2. *Neck.* (*a*) Goitre (cystic type).
   (*b*) Tubercular glands (caseous).
3. *Chest.* (*a*) Lungs.
   (1) Tuberculosis.
   (2) Pneumonia.
   (3) Pleurisy with effusion.
   (4) Empyema.
   (5) Hydrothorax.
   (6) Pneumothorax.
   (7) Emphysema.
   (*b*) Heart.
   (1) Displacement.
   (2) Transposition.
   (3) Hypertrophy.
   (4) Dilatation.
   (*c*) New Growths.
   (*d*) Aneurisms.
4. *Abdomen.*
   (*a*) Stomach: (1) Size; (2) position; (3) tumors.
   (*b*) Liver: (1) In children; (2) subphrenic abscess.
   (*c*) Gall Bladder: (1) Calculi.
   (*d*) Kidneys: (1) Calculi; (2) pus; (3) tumors.
   (*e*) Ureters: (1) Calculi.
   (*f*) Bladder: (1) Calculi.
   (*g*) Pregnancy.
5. *Bones.*
   (*a*) Osteo-arthritis.
   (*b*) Tuberculosis.
   (*c*) Osteomyelitis.
   (*d*) Sarcoma.
   (*e*) Necrosis.
   (*f*) Syphilis.
   (*g*) Rachitis.

The demonstration was in charge of Dr. F. B. Granger.

DEMONSTRATION OF X-RAY IN SURGICAL DIAGNOSIS.

Since the essential part of the diagnosis by means of the x-ray is in the interpretation of x-ray pictures, a brief lantern slide demonstration was arranged and repeated at intervals during the morning. Plates which were shown were selected to illustrate the different appearances which are characteristic of different forms of disease affecting the bone, and the points which were characteristic in the x-ray picture of each disease were explained; *e. g.*, plates were shown illustrating the fact that portions of the bone cast shadows of an intensity directly proportionate to their atomic weights, and hence only the portions of the bone which normally are partially formed of lime salts will appear in the x-ray picture. Those portions of the bone which are constructed of organic matter, on the other hand, do not appear in the x-ray picture at all. However, since different forms of disease affect the calcified structure of the bone in different ways, one may infer the condition of the soft parts from the manner in which the dense portion of the bone is invaded. To illustrate this point, plates were shown of the more common lesions which affect the bone.

Points like the following were especially dwelt on and illustrated by special cases. Tuberculosis rarely affects the shaft of the bone and nearly always affects the epiphyseal end. Syphilis on the other hand rarely affects the epiphyses, almost always the diaphysis. In the early stages tuberculosis is characterized by loss of bone substance, whereas syphilis nearly always causes hypertrophy of the bone. A blistered appearance on the surface of the bone is characteristic of syphilis. Tubercular sequestra are always small and usually poorly defined, while the sequestra of osteomyelitis are generally large and clearly defined. Bone abscesses caused by tuberculosis are usually small, while those caused by septic processes are large.

In a similar way the appearances characteristic of medullary and periosteal sarcoma, chondroma and osteoma, and hypertrophic and atrophic arthritis, and other forms of bone diseases, were spoken of and illustrated.

This demonstration was in charge of Dr. E. A. Codman.

8. METHODS OF DIAGNOSIS IN DISEASES OF THE NOSE AND THROAT.

Slides of the usual pathoiogical conditions of the nose and throat were demonstrated, x-ray plates in series were displayed showing their value in locating the frontal sinus and determining its size. There was a second series of plates of foreign bodies in the trachea and esophagus.

In a typical examining booth, darkened, cases of sinus disease (antrum and frontal) were demonstrated by transillumination. In a second booth or room a cadaver was placed by means of which the diagnosis and management of foreign bodies in the trachea and esophagus were explained and illustrated. The recent instruments which have been invented for this purpose were shown and used.

Owing to the illness of Dr. Coolidge this demonstration was under the charge of Dr. Harris P. Mosher, assisted by Dr. H. A. Barnes.

9. METHODS OF DIAGNOSIS BY MEANS OF THE CYSTOSCOPE IN GENITO-URINARY DISEASES.

In this demonstration five human bladders were used, previously prepared, some of them in the usual Kaiserling solution, some in formalin-salt solution. Before hardening they were distended with the fluid, and bougies and glass rods tied in to ensure patent urethra and ureters. The difficulty in using these cadaver bladders is their inflexibility after keeping them in any solution that will preserve them. The bladders we used failed to show after even the Kaiserling treatment, any serviceable preservation of color, but in other respects were satisfactory. They were slung in cloth pockets in especially prepared boxes so as to give approximately normal relations. The cystoscopes were then used exactly as on a patient.

With the Nitze examining cystoscope the technique was demonstrated, the bladder wall shown, the ureters and a bougie tip protruding from the ureter opening into the bladder, etc.

With the Kollmann the special technique of its handling was shown with a demonstration of the location of the ureters and of foreign bodies placed in the bladder.

With the Nitze-Albarran catheterizing cystoscope we succeeded in showing to a good many spectators the actual technique of ureter catheterization. First, the ureter opening was brought into the field of the cystoscope and shown to them in turn, then the catheter tip was protruded and brought in place to enter the ureter, this field showing the catheter tip directed to the ureter opening and ready to enter; both in the same field were then shown. Then the catheter was inserted and shown actually entered into the ureter.

With the air inflation direct view cystoscope we had found it impracticable to catheterize ureters on the specimens, but we demonstrated what can be seen through the small, brightly lighted field of this instrument, showing inserted foreign bodies, etc.

In addition to the distended specimens two opened bladders were shown demonstrating the ureter openings and their relation to the trigone.

The Harris segregator was shown in actual operation on a prepared bladder to the ureters of which siphon tubes brought a fluid supply from bottles on the table. This worked well and, coupled with diagrams of the instrument, seemed of interest.

The Newer Luy's separator was shown and explained. Unfortunately this instrument, being to some extent dependent on elasticity of bladder wall, cannot be made to work well in these prepared bladders.

The demonstration was successful in showing to a large number of the members of the Society some things unfamiliar to most of them and of real importance. Apparently, to many the technique of bladder examination had been a very foggy matter, and to these the demonstration of the feasibility of ureter catheterization was something wholly new.

There was delay in getting started and some trouble later on from the difficulty in handling low-tension lamps with a street-current and somewhat unreliable controllers for such continuous use as this sort of demonstration calls for. This can be avoided next time.

The demonstration was in charge of Drs. F. C. Cotton and F. G. Balch, assisted by Drs. Binney, Chute and O'Neil.

10. METHODS OF EXAMINATION OF URINE.

This demonstration was in charge of Dr. R. L. Emerson.

11. METHODS IN BACTERIOLOGY.

The demonstration comprised the following:

Anthrax. — A gelatine culture. Bacilli from a mouse dead of anthrax. Bacilli containing spores.

Tetanus. — Photograph of culture. Bacilli with spores.

Actinomycosis. — A culture of bovine actinomyces. Udder of cow with actinomyces (section). Smear of pus from liver of man showing actinomyces.

Glanders. — Culture from horse, having passed through a guinea pig. Photographs of cultures. Bacilli from a culture.

Rabies. — Section of Ammonshorn of rabid guinea pig and section of Ammonshorn of rabid dog (both showing "Negri bodies," the supposed cause of rabies). Numerous large photographs which were exhibited at St. Louis.

Diphtheria: Pseudo-Diphtheria: Xecosis. — Pure cultures and throat cultures. Also, the acid producing properties in serum-water-litmus, containing the sugars dextrin and saccharose. Microscopic specimens of same stained with methylene-blue and Neisser's stain. Preparations of toxin and antitoxin of diphtheria.

Bacillus of Dysentery: Shiga: Flexner: Duval. — Cultures on agar-agar. Also cultures in serum-water-litmus containing the sugars saccharose, maltose, mannit, dextrose, dextrine and lactose, showing the different acid-producing properties of the bacilli Also microscopic specimens stained with dilute carbolfuchsin.

Spirillum of Cholera. Finkler-Prior: Metchnikoff. — Agar-agar cultures. Also the indol production of the spirilla in peptone solution. Microscopic specimens stained with dilute carbolfuchsin.

Stained Specimens. — Pneumobacillus, showing capsule: Pneumococcus showing capsule: Streptococcus.

Cultures of: Staphylococcus pyogenes aureus; staphylococcus pyogenes albus; staphylococcus epidermis albus; staphylococcus pyogenes citreus; staphylococcus cereus flavus. Streptococcus pyogenes. Bacillus pyocyaneous; pneumobacillus on agar; pneumobacillus in gelatine; pneumococcus; bacillus prodigiosus; bacillus violaceus; bacillus ruber plymuthicus; bacillus rosaceus metalloides; micrococcus roseum; bacillus cinnabareus.

Tubercle Bacillus. — Cultures of human, bovine, avian, fish and blind-worm races. Tubercle bacilli in sputum with method of straining. Tuberculin; its preparation and its use in the tuberculin reaction, with charts showing reactions. Homogeneous culture of Arloing and Courmont.

Diplococcus Intracellularis Meningitidis. — Cultures on agar and blood-agar. Stained sediment of cerebro-spinal fluid.

Typhoid and Colon Group. — Cultures of typhoid, paratyphoid (2 races) and colon on agar, bouillon, glucose bouillon and litmus milk. Stained specimen of typhoid bacillus showing flagella.

Serum Reactions. — Widal's reaction. Macroscopic agglutination test with preserved culture of typhoid bacillus. Tubercle bacillus agglutination test of Arloing and Courmont. Agglutination reaction of Shiga's bacillus of dysentery.

Blood Cultures. — Demonstration of technique.

Several cultures of gonococcus and smears of gonorrheal pus stained by various methods were also shown.

Cultures of amebæ with typhoid bacilli grown on the Musgrave and Clegg media; stained specimen of the amebæ grown on the media; specimens of the ameba of dysentery in the unstained and motile state to show the appearance of the amebæ presented in the stools in amebic dysentery. Methods of examination of stools for the diagnosis of amebic dysentery.

The demonstration was arranged by Dr. H. C. Ernst. In his absence it was carried out by Dr. Langdon Frothingham assisted by Drs. G. L. Baker, E. E. Everett, H. W. Hill, F. W. Palfrey, H. J. Perry and E. N. Tobey.

12. METHODS IN ESTIMATING COAGULATION TIME OF BLOOD.

Although several instruments have been used to determine the coagulation-time of the blood, only two are now in use, — (1) the Wright tubes, and (2) the Brodie-Russell moist chamber. Of these two, the Brodie-Russell is the more reliable.

In the demonstration before The Massachusetts Medical Society the Wright tubes were displayed while the actual tests were made with two instruments modified respectively by Prof. W. T. Porter and Dr. J. H. Pratt, from the original Brodie-Russell chamber. The tests consisted in the determination of the coagulation-time of fresh blood, drawn at the time from a volunteer, usually the visitor.

The determination of the coagulation-time of the blood is of value in the diagnosis, both of surgical and of medical diseases.

It is well known that certain patients suffering from jaundice die from fatal capillary hemorrhage after surgical operations. A knowledge of a delayed coagulation-time will allow the surgeon to decline to operate until an attempt has been made to restore the coagulation-time to normal. On the other hand, the medical value of the coagulation-time is seen in the differential diagnosis between hemorrhagic purpura and hemophilia, since, in the former, the coagulation-time is normal while in the latter the coagulation-time is markedly delayed.

The demonstration was in charge of Dr. A. H. Gould, assisted by Messrs. Jason and Charles Mixter.

13. METHODS IN EXAMINATION OF BLOOD.

Methods of estimating hemoglobin and of counting the corpuscles, the method being illustrated by the actual preparation of specimens and by the use of charts. Differential counting, the preparation and staining of films and a demonstration of specimens stained to show the various corpuscles. Methods of counting the platelets and demonstrating these interesting, though as yet clinically unimportant, bodies in stained specimens were shown. A demonstration of the iodine reaction. The Deland hematocrit and its use in determining the volume index, — a method which bids fair to be of value in the diagnosis of pernicious anemia, was also shown. Spectroscopic and chemical tests were shown. A show-case containing apparatus used in the examination of the blood was exhibited by the Sampson-Soch Co. Thanks are also due to Dr. R. C. Cabot and to Tufts Medical School for the loan of specimens.

The demonstration was under the general charge of Dr. R. C. Larrabee, of Boston, assisted by Drs. R. E. Andrews, H. C. Dunn, H. C. Emerson, F. W. Gay and Mary W. Rowley.

14. METHODS IN LEGAL MEDICINE.

This demonstration included illustrations of the physical character, chemical tests, microscopical tests and micrometry and the biological tests for blood.

A. — Physical character of stains.

1. Specimens illustrating the time of drying on polished surface (cardboard) and absorbing surface (pine board) of stains.
2. Specimens illustrating direction of blood spots and spatters, showing characteristic shapes (oval, oval with projection, indian club and streak) of blood spatters made (*a*) by pulsating vessel parallel to surface on which spatters were found, (*b*) by pulsating vessel on surface held perpendicularly above, (*c*) by blood dropping from above, (*d*) by bludgeon striking a pool of blood.
3. Age of staining as shown by brownish discoloration.
4. Method of picking clots from cloth with dissecting microscope.
5. Method of making cells for microscopical study of corpuscles.

B. — Chemical tests.

1. Phosphotungstic acid test for collecting pigment from stains (especially washed stains). Not specific.
2. Guaiac test for blood — not specific.
3. Hemin crystals (specific).

C. — Microscopical tests and micrometry.

1. Diagrams illustrating at a magnification of 10,000 diameters:

(*a*) Types of corpuscles — mammalian (circular), non-nucleated, example (man); exceptions, camel, llama (oval), non-nucleated, example (camel); fish, amphibian, reptilian, bird (oval), nucleated, example (chicken); lamprey (circular), nucleated.

(*b*) Relative sizes of mammalian red cells (averages from Gulliver and Wormley), including (in order of size) elephant, sloth, platypus, whale, camel, opossum, capybara, porcupine, monkey, kangaroo, wolf, wood-chuck, rat, rabbit, bear, dog, hippopotamus, ass, hyena, mouse, mule, ocelot, bat, raccoon, squirrel (red), lion, tapir, squirrel (ground), ox, horse, pig, buffalo, cat, elk, leopard, sheep, goat, muskdeer.

(*c*) Variations in size of human red cells in health showing extremes in childhood (1-2385 in. to 1-7575 in., Hayem); extremes in adults (1-2900 in. to 1-2800 in., Hayem); ordinary variations (90% between 1-3100 and 1-3300 in., Formad); average (1-3250 in., Wormley), and average size of swollen spherical cells in aqueous fluids (1-4267 in., Formad).

2. Microscopical illustrations of:

(*a*) Types of red cells:
Mammalian — man; exception — camel; fish — goldfish; reptilian — snake; amphibian — toad; bird — chicken.

(*b*) Micrometry.
Filar micrometer (B and L) used with Leitz 1-16 oil immersion objective, giving a unit of 1-650,000 in. (actual limit of microscopic vision about 1-250,000 in.)
Scale micrometer (movable).
Stage micrometer (for standardizing eye-piece micrometers).

(*c*) Comparative sizes of mammalian red cells. (Microscopes supplied with disc micrometers for comparison.)
Smears of guinea pig, muskrat, monkey, rabbit,

gray squirrel, dog, mouse, ox, horse, pig, cat, sheep and goat bloods.

Specimens of normal human blood, shrunken spherical cells in aqueous diluent, menstrual blood showing squamous cells, and blood from stain. Smear of blood from chlorosis showing variation in size of cells from 1–2389 in. to 1–5385 in.

D. — Biological tests.

1. Diagrams illustrating hemolysis (as characteristic of biological reaction).
2. Method of preserving anti-body producing substances, such as blood, in a sterile condition. (Loeffler.)

(*a*) Human blood dried on a glass plate.
(*b*) Human blood sterilized and sealed in a glass tube.

3. Method of humanizing rabbits.

(*a*) Collection of human placental blood in sterile flask.
(*b*) Cards illustrating injection records and weights of rabbits.
(*c*) Blood obtained by cardiac puncture from rabbits.

4. Precipitation test.

(*a*) Description of technique, character of reaction and sources of error.
(*b*) Series of animal bloods on filter paper for controls.
(*c*) Individual, graduated capillary pipettes for diluting each blood tested.
(*d*) Cubic centimeter tubes and racks. (Nuttall.)
(*e*) Qualitative tests with human blood (early-clouding.)
(*f*) Qualitative tests — precipitate, collected in capillary tubes for measurement and comparison.

5. Agglutination test — as obtained by adding to solution of stain, heterologous blood (not specific, only valuable as confirmatory of precipitation test).

(*a*) Specimen showing agglutination of human blood by rabbit's blood.

6. Hemolysis — not specific enough for medico-legal purposes.

(*a*) Smear of human blood on plate of glass with letters M.M.S. formed by solution of red cells by hemolytic serum of a humanized rabbit.
(*b*) Microscopic illustration of solution of red cells (human) by hemolytic serum (humanized rabbit).

The demonstration was given by Dr. Timothy Leary.

15. DEMONSTRATION OF THE METHODS OF KEEPING MEDICAL RECORDS.

The demonstration consisted of the display of either specimen records or record blanks to illustrate what seemed to us the most approved methods of keeping the following:

1. Private records.
   (*a*) Cases.
   (*b*) Accounts.
2. Hospital records.
   (*a*) Clinical.
   (*b*) Pathological.
3. Medical Literature.

A careful study of the subject has convinced us that in all cases of the above groups the most convenient and accessible method is by the use of index file, and consequently the entire exhibit was devoted to it in its various forms. In general, the advantage of this method over all others lies in its unit character, which admits of (1) convenient arrangement according to any desired plan, (2) unlimited growth, (3) great accessibility, and (4) any desired scheme of indexing.

Several types of private records were shown, including cards of various sizes, — large for office work, and smaller ones of such size to be conveniently carried in the pocket or bag. In every instance it was proposed that they should ultimately be arranged in an index file of suitable form. Similarly, a large variety of cards ruled for accounts (mainly 4 x 6 in.) were included in the exhibit. A considerable display was also made of hospital records, consisting, for the most part, of large sheets printed in forms for special purposes, according to the type of hospital. In some cases these were ultimately bound into volumes, in others filed in appropriate cases, always with separate index files, by name, disease, complications, etc. During the patient's stay in the hospital, all records, charts, photographs, etc., should be kept in a folder either at the bedside or in some accessible place.

The system when applied to the keeping of medical literature admits of the filing of abstracts of articles on card catalogue cards, or of the articles themselves by title with a cross reference catalogue by authors and subjects.

16. METHODS IN EXAMINATION OF SPUTUM.

The sputum demonstration consisted of microscopic preparations, cultures, and photographs of some of the more important findings in diseases of the respiratory tract.

Besides tubercle bacilli and actinomyces, sputum preparations were shown, illustrating infection with influenza bacilli, micrococcus catarrhalis, pneumococci, pseudo-pneumococci, etc. It is important to recognize that these organisms are capable of causing mild or severe respiratory infection, the clinical course of which in some instances may resemble pulmonary tuberculosis.

Elastic fibres, at times valuable in the differentiation of pulmonary abscess from bronchiectasis, and conclusive evidence of pulmonary destruction, whether of tubercular or other origin, were demonstrated. Fibrinous casts of the bronchi and Curschman spirals were also shown.

The danger of the spread of tubercular material through flies was illustrated by sections of flies and microscopic preparations of their excrement, showing tubercle bacilli. That infected fly specks may continue to be a danger after their deposit was shown by the preserved organs of a guinea pig, in whom tuberculosis had resulted from the infection of such material after it had dried for fifteen days.

Several specimens of Distoma ringeri, the cause of an hemoptysis, endemic in Japan, Corea and certain parts of China, were a feature of the exhibit. They were kindly sent for the demonstration by Professor Inouye, of Chiba, Japan. The cases may resemble tuberculosis clinically, but the diagnosis can be made by finding their eggs, preparations of which were shown.

The demonstration was in charge of Dr. F. T. Lord, assisted by Dr. Wm. H. Smith.

17. METHODS OF STUDY OF BLOOD PRESSURE.

In the blood-pressure demonstration the instruments of Riva Rocci, Stanton and Janeway for estimating the blood-pressure were shown and their principles explained. Visitors were given an opportunity to familiarize themselves with the technique of these instruments by taking a patient's blood-pressure.

The inflatable rubber suit devised by Dr. Crile to counteract the loss of the vaso-motor tone in cases of shock was also exhibited and demonstrations given of the efficiency of the procedure by raising and lowering the blood-pressure of a patient.

Blood-pressure charts taken on cases in the Massachusetts General Hospital were on exhibition to illustrate the characteristic curves and levels of nephritis, surgical shock, cerebral compression, etc.

This demonstration was in charge of Dr. F. T. Murphy assisted by Drs. J. B. Ayer and S. B. Vincent.

18. METHODS IN CYTO-DIAGNOSIS.

There were demonstrated specimens of pleural and abdominal fluid, stained preparations of the sediment of pleural and cerebrospinal fluids, including acute infectious and tuberculous varieties, and also transudates were shown as well as the apparatus, reagents and stains necessary for making the preparations.

A guinea pig showing tuberculous lesions of the liver, spleen and lymph nodes as a result of previous inoculation with tuberculous pleural fluid was exhibited.

A collection of photographs illustrating the different characteristics of the various sediments and different cells occurring in the different varieties of pleural effusions was shown.

The purpose of this exhibit was to demonstrate that the examination of serous fluids was of aid in determining their etiology.

The demonstration was in charge of Dr. Percy Musgrave, assisted by Mr. Roger Lee.

19. METHODS IN GASTRIC DIAGNOSIS.

Patients suffering from different gastric diseases were shown, physical examinations made, and where it was practicable chemical and microscopical examinations were made of the stomach contents, demonstrating the modern methods employed in this work.

A large number of patients were present, showing the different diseases of the stomach from simple catarrh, an acidity, hyperacidity, retention of food, gastroptosis, etc., to malignant disease.

Some patients with esophageal diseases, viz., stricture, diverticulum, were also shown.

The demonstration also included some cases of malignant disease indicating operation, and other cases which had been previously operated upon for like conditions.

The demonstrations were given by Drs. Franz Pfaff and Dr. Elliott P. Joslin, assisted by Drs. M. Vejux Tyrode, Richard F. Chase, Henry T. Barstow, Wm. L. Smith, Louis Kekm and Malcolm Seymour.

20. METHODS IN EXAMINATION OF FECES.

The demonstration of the clinical methods of examining feces was divided into five sections.

I. Microscopical appearance of the stools in different pathological conditions and their diagnostic significance. A collection of specimens for this purpose had been especially prepared. Portions of stools had been placed in large test tubes, a small amount of formalin added and the tube sealed. The appearance and color of the fresh stool was preserved. In this collection were stools dark from admixed blood, and stools equally dark that were free from blood. The similarity in appearance emphasized the necessity of performing the chemical test for blood. Pea-soup discharges of typhoid fever, green stools containing bilirubin and biliverdin, and stools composed largely of fat crystals, and one consisting almost entirely of fat in the form of oil droplets, were shown among others.

II. Bacteriological diagnosis of typhoid and dysentery from a study of the stools. The method of isolating the typhoid, differentiating colon, and dysentery bacilli, by the use of Hiss' media, was shown. By this method the bacteriological diagnosis of typhoid infection can be made in fourteen hours. The agglutination tests with the dysentery bacilli were performed.

Collection of interstitial parasites, and the methods of identifying them. Diagrams of parasites were prepared to show clearly the chief diagnostic features.

III. Special attention was drawn to the dibothriocephalus latus. Imported cases are more common than is generally supposed. Eggs and segments of worms were shown under the microscopes.

IV. Chemical methods of diagnosis. The guaiac test for blood was demonstrated continuously throughout the morning. It was thought advisable to show clearly and repeatedly a simple modern test that would be of value to the general practitioner, and the guaiac and aloin tests for blood were selected. Three demonstrators were engaged in performing these tests.

V. A collection of the standard works on the clinical study of the feces was shown.

The demonstration was in charge of Dr. J. H. Pratt, assisted by Drs. A. C. Cummings, J. W. Dewis, C. W. Duval, W. R. P. Emerson, H. C. Low and H. W. Thayer.

21. METHODS IN NEUROLOGY.

A number of patients were shown with different disorders of sensibility, motion and muscular nutrition and the various methods of diagnosis demonstrated on them. The different groups of visitors were passed along from one demonstrator to another, and thus given an opportunity to see the methods of examination. On a model from the Massachusetts Normal Art School, the different areas of the skin corresponding to the peripheral-nerve distribution and the nerve-root distributions respectively were mapped out and demonstrated.

The demonstration was in charge of Dr. J. J. Putnam, assisted by Drs. Knapp, Prince, Taylor, Walton and Waterman.

22. METHODS USED IN BOARD OF HEALTH EXAMINATIONS.

I. Demonstration of the Widal or agglutinative test for typhoid fever. This consisted in showing the methods used in the laboratory for testing blood dried on bits of weighed paper and sent by mail from different parts of the state. The paper is weighed before it is sent out and again when received with the dried drops of blood on it. The difference in weight equals the weight of dried blood. This is cut out and soaked in a given quantity of a bouillon culture of typhoid bacilli so calculated as to yield a dilution of one of liquid blood to twenty of culture fluid, or about one of blood-serum to thirty-five or forty of culture fluid. Clumping after two hours is considered a positive test for typhoid.

The specific action of typhoid agglutinin was demonstrated as follows: Two rabbits were immunized by repeated injections of heated cultures of typhoid and paracolon bacilli respectively. The blood serum of these rabbits diluted from $\frac{1}{5}$ to $\frac{1}{2560}$ was distributed in small test tubes and the bacilli added from cultures. Marked agglutination of typhoid and paracolon bacilli in their respective sera was evident up to $\frac{1}{1000}$, whereas there was no recognizable clumping when paracolon bacilli were added to "typhoid" serum and typhoid bacilli to "paracolon" serum even in dilutions as strong as one-twentieth.

II. Demonstration of the method used in making a diagnosis of malaria. Films of blood dried on coverslips and sent in special tin capsules by physicians from different parts of the state are fixed and stained and carefully examined for malaria parasites.

III. Demonstration of leprosy bacilli obtained by swabbing the nose of two cases of this disease in Massachusetts. The smears are made on slides or coverglasses in the usual way, and stained according to the methods in use for tubercle bacilli.

IV. Demonstration of the method used in making a diagnosis of diphtheria. The following were shown:

Outfit for taking cultures in cases of suspected diphtheria.

Cultures from throats suspected of containing the bacilli of diphtheria.

Pure cultures of bacillus diphtheriæ, staphylococcus pyogenes aureus, streptococcus pyogenes.

V. Demonstration of the method used in the diagnosis of tubercle bacilli in sputum.

Outfits were shown in which the sputum is collected by the patients and sent by physicians from various parts of the state to the laboratory at the State House. The method of staining and examining dried films of sputum was shown and pure cultures of tubercle bacilli exhibited.

VI. The staining and microscopic examination of cerebrospinal fluid, obtained by lumbar puncture, were also shown.

The Boston Board of Health Laboratory Exhibit was designed chiefly to demonstrate the modifications of ordinary bacterial methods of diagnosis devised and used to meet requirements of public health practice in which large numbers of examinations from different sources must be rapidly made without sacrifice of accuracy or efficiency. These included special forms of apparatus, large slides, special water-baths, staining baths, decolorizing baths, needle holders, etc., all co-ordinated to this end. The outfit devised for the collection of the specimens for examination from cases suspected of diphtheria, tuberculosis, typhoid, malaria and glanders were exhibited. Certain new devices were shown, such as a water-pressure filter for securing bacteria-free filtrate from liquid cultures; porous tops for Petri dishes, used to prevent spreaders in milk and water plate counts; an apparatus for staining bacteria or other minute bodies while under continuous direct microscopic observations, etc.

There demonstrations were under the direction of Drs. Theobald Smith and H. W. Hill, assisted by Dr. A. L. Reagh, Mr. B. R. Rickards and Mr. E. L. Walker.

23. METHODS IN COMPARATIVE PATHOLOGY.

I. Demonstration of the resistance of red corpuscles of the horse to different strengths of salt solution and diluted serum. The demonstration is carried out by putting salt solution in different strengths from 0.40% to 0.68% into small test tubes and then adding sedimented red corpuscles. The amount of hemolysis or laking is measured by a freshly prepared series of tubes containing hemoglobin tints of definite per cent. At the same time, no tubes of serum definite amounts of distilled water are added, and red corpuscles are then added to these to determine the amount of water which can be added before laking occurs. The demonstration shows:

1. That in blood the red corpuscles can be divided into a large number of classes of different resistance to salt solutions and to diluted serum.

2. That each horse has red corpuscles of definite degrees of resistance which are constant for the same individual but which may differ from those of another horse, and that resistance varies within certain limits.

3. That horses which have been bled many times may or may not show a diminished resistance of the red cells.

4. That from a comparison of the hemolysis in salt solution and diluted serum may be calculated the osmotic tension of the serum.

II. Demonstration of a series of cultures of tubercle bacilli from man, horse, cattle, pig, dog, cat, *Nasua narica*, and pigeon.

The demonstration was in charge of Dr. Theobald Smith, assisted by Mr. H. R. Brown.

24. METHODS OF RAPID ANATOMICAL DIAGNOSIS.

This demonstration consisted in an exhibition of a rapid method of preparing sections of tissue for microscopical examination by means of freezing with carbon dioxide gas.

The method is especially useful in the diagnosis of tumors and other pathological tissue, because by it stained and permanently mounted sections satisfying all the usual requirements may be obtained in a few minutes.

The demonstration was in charge of Dr. James H. Wright.

AMERICAN SURGICAL ASSOCIATION.

Twenty-sixth Annual Meeting, Held at San Francisco, Cal., July 5, 6 and 7, 1905.

(Continued from No. 11, p. 312.)

STATUS LYMPHATICUS AND THE DUCTLESS GLANDS.

Dr. Roswell Park of Buffalo, N. Y., defined the term status lymphaticus and stated that the reason for bringing the subject before a body of surgeons was because the condition itself had so much to do with the question of toleration of anesthetics and the matter of repair of wounds that it really was one of exceeding importance. Not a few cases of sudden death during and after operation were to be explained by the abnormalities constituting this condition. These had usually been attributed to the anesthetic or the anesthetist, and it might be that had the latter appreciated all the dangers offered by the condition he would have guarded his anesthetic or perhaps abstained from giving it. Nevertheless, the anesthetiser was not always to blame, because he was often called in without previous knowledge of the case, it being really the function of the medical attendant to carefully study it and determine its peculiarities. The relation which the lymphatic system and the lymph-making organs bear to each other and to the ductless glands was as positive as it was obscure. Lymphoid tissue throughout the body seemed to increase as the thymus normally disappeared. In infantile marasmus the thymus had usually completely and prematurely disappeared, its condition being a fair index as to general nutrition. But it was hypertrophy rather than atrophy of the thymus which most interested the surgeon, since those individuals who die suddenly and unexpectedly usually had an enlarged thymus. There certainly existed strange relationships between the pituitary body, the thymus, the thyroid, the coccygeal body, the testes, the ovaries, and perhaps the bone marrow. In this list the quite recent researches relative to the parathyroids should also be included. A clearer recognition of the function of the latter seemed to have changed the whole aspect in which we should regard Graves' disease, it being made quite probable that this condition was due rather to atrophy of the parathyroids than to excess of the thyroid or its secretion. In the ordinary forms of cystic goitre, where thyroid secretion was not augmented, the symptoms of Graves' disease were lacking. It was usually after removal of the thyroid proper that the opposite symptoms of Graves' disease appeared, *i. e.*, myxedema and cachexia, while when the parathyroids were taken away the peculiar symptoms of Graves' disease appeared.

The life history of the thymus was closely related to that of the testes. Atrophy of the former would seem to depend upon complete maturation of the latter. These statements could be corroborated by a study of cryptorchids and castrated animals.

The status lymphaticus was also described under

the terms lymphatism, lymphatic constitution and status thymicus, the condition having apparently more to do with the thymus than with any other isolated organ. Thymus extract produced in animals a fall of blood pressure with acceleration of the heart, and, in fatal doses, collapse. Thymic enlargement might cause death by pressure on important structures, even distinct from the trachea. Thymic asthma, a condition known for some time, was one in which death sometimes occurred most unexpectedly and quickly. In these cases not only was the thymus enlarged, but there was found a general hyperplasia of the lymphatic tissue, with enlargement of the lymph nodes and of the spleen.

The relations between status lymphaticus and rickets were frequent and pronounced. Nearly all cases of the former displayed the ordinary clinical evidences of the latter. The participation of the lymphatic system was most casually apparent in the involvement of the faucial, laryngeal and lingual tonsils, *i. e.*, the so-called adenoids of the throat specialists. It was notable that it was in these cases that death most often occurred during or after anesthesia.

Thymic asthma was practically the same thing as laryngismus stridulus. The occurrence of this in children ought always to serve as a warning, as well as an indication for careful study and treatment. Should, then, chloroform be given to such a case inadvertently or unnecessarily, the agent would not be nearly as responsible for the death as the practitioner who employed it. The condition was to be recognized by the ordinary evidences of rickets which were usually present, by generalized enlargement of the lymph nodes, the presence of adenoids in the naso-pharynx, a history of laryngismus stridulus or special liability to spasm of the glottis, perceptible enlargement of the thymus, or by notable enlargement of the thyroid or spleen. In the young these conditions simulated cretinism.

Such a clinical picture as would afford the above features should serve as a warning and make one abstain from the use of anesthetics unless absolutely necessary, while it should also prompt carefully directed treatment. This treatment should consist of careful attention to elimination, as well as to nutrition, while thymus or pituitary extract should be administered internally, as well as the glycero-phosphates or some similar up-building tonic. If, now, it should be necessary to clear out the naso-pharynx in such a case, the parts should be first desensitized by cocain, to which a little adrenalin might be added, even previous to beginning anesthesia. If the patient be known to be subject to glottic spasm, one should be prepared to do a tracheotomy on an instant's notice, and especially so if the thymus be perceptibly enlarged. One might even have to use a long trachea tube. Operations of convenience should be postponed until the patients can be carefully built up. Operations of necessity may be practiced with the above precautions, while in cases of impending or actual emergency one might depend upon artificial respiration after tracheotomy and the use of adrenalin.

PATENT URACHUS, WITH A REVIEW OF THE CASES REPORTED; OPERATION ON A CASE COMPLICATED WITH STONE IN THE KIDNEY.

DR. GEORGE TULLY VAUGHAN of Washington, D. C., explained the defective development in embryology which leads to the formation of patent urachus and of Meckel's diverticulum. He gave a short review of the literature and stated that the older anatomists held different opinions as to whether the urachus was a tube or a solid cord. He divided cases of patent urachus into the complete, blind, blind-internal and blind-external, and into congenital and acquired varieties, and explained the occurrence of some cases of acquired patent urachus by the pressure of urine in the bladder from obstruction to its normal outflow, causing Wut's valve (a small valve which guards the bladder opening of the urachus) to give way and permit urine to enter the urachus, when, if infection took place, abscess formed, and pus broke through the umbilicus or discharged into the bladder.

He briefly recounted 52 cases reported in the literature and added one case of his own, of which 38 cases were operated on, with 32 recoveries, 3 deaths, and in 3 the result was not reported. He divided the methods which had been tried for closing the open urachus into 8 classes, as follows: (1) The application of caustic or of the actual cautery to the umbilical opening. (2) The use of the cautery and of ligatures or sutures. (3) The use of ligature or suture only. (4) Plastic operations, the application of a flap of skin to close the opening. (5) To open or slit up the urachus, curet or cauterize, and pack. (6) Removal of sources of irritation from the urachus, such as stones, pus, etc., and keeping the parts clean. (7) Removal of obstruction to the flow of urine from the bladder through the urethra, as a tight prepuce, strictures of the urethra, hypertrophy of the prostate, and tumors or stone in the bladder. (8) Extirpation or dissecting out of the urachus and sewing or ligating the part next to the bladder, after the manner of treating the appendix in appendectomy.

The author did not approve of the method of simply closing the umbilical end of the fistula, lest an infected suppurating area be left which might cause septicemia or peritonitis. He considered slitting open and packing the abscess cavity a rational operation, but thought the operation of election was to dissect out the urachus with the entire diseased area. Dr. Vaughan used this method in his case — a man of forty, who had an acquired patent urachus since the age of seventeen. A month after the patent urachus had been cured it was necessary to perform nephrolithotomy on the right kidney, and nine months later the same operation on the left kidney.

A brief consideration was given to tumors and cysts of the urachus.

(To be continued.)

Recent Literature.

The Practical Medicine Series of Year Books, comprising ten volumes on the year's progress in medicine and surgery. Issued monthly, under the general editorial charge of GUSTAVUS P. HEAD, M.D. Volume VIII. Materia Medica and Therapeutics, Preventive Medicine, Climatology, Suggestive Therapeutics, Forensic Medicine. 344 pages. Chicago: The Year Book Publishers. July, 1904.

In general the articles from the literature have been selected with discrimination and the abstracts made with care. The section on Materia Medica and Therapeutics is especially commended for the inclusion for the most part of only the more reliable work. Under Preventive Medicine there are many valuable suggestions. The chapters on Climatology, Suggestive Therapeutics and Forensic Medicine may be read with profit. The book is unhesitatingly recommended and will be found useful for reading or reference.

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THE NEW YORK STATE CHARITIES AID ASSOCIATION.

The report of this association is always of interest, representing, as it does, the work which may be done for the improvement of public charitable institutions by unofficial means. Its disinterestedness is naturally assured by this fact, and its very great usefulness may easily be estimated by a glance at the work which it yearly accomplishes. This last year the local committees of the association have visited and maintained supervision over almshouses and hospitals in all but fifteen counties of the state. The fourteen state hospitals for the insane and seven charitable institutions have likewise been visited. Committees have appeared before the recognized authorities to state the needs of certain public charitable institutions and to obtain appropriations. Legislation has been secured to provide for the establishment of a state training school for girls, and in general the association has taken an active part in promoting reforms through political means. On Oct. 1, 1904, there were under the oversight of the various branches of the association upwards of a thousand children being cared for in various ways. This has been done at extremely small expense, and the advantages of family life have in many instances been obtained for these young children through their placing out in families. Permanent homes have also been found for seventy-three destitute children who otherwise would have been public charges. Situations have been provided in the country for destitute mothers with infants to the number of five hundred and twenty-six homeless women with their babies. Other committees and agencies cooperate with those in charge of various institutions to the evident advantage of both the administrators and those under their charge.

The work thus briefly stated evidently represents much more than at first appears. In the first place, the association provides an intelligent interest in the needs of the dependent classes which could be obtained in no other way. From its independence of political control, it is furthermore capable of exerting an influence which cannot excite jealousy or arouse prejudice. On the other hand, one can easily see how great a degree of tact must be required to investigate institutions without arousing antagonism. That the association has thus far succeeded in prosecuting its work gives evidence that this difficulty has been successfully met. In general, we are convinced that institutions are the better for the interest which intelligent citizens take in them. The publicity to which this leads is eminently desirable, and there should be no reason why those in direct authority should not be able to work in conjunction with public spirited persons whose interest is purely unofficial.

NEED OF HOSPITALS IN LABRADOR.

We have before commented on the self-sacrificing and beneficent work which Dr. Wilfred Grenfell is doing among the deep-sea fishermen along the coast of Labrador. His recent visit to the United States certainly did much to stimulate general interest in his work, and, no doubt, accomplished more in a material way through contributions to his various enterprises. It is, however, evident that for the continuance and development of the hospital system which he has set himself to establish considerable funds will be necessary which must be regularly supplied. It is, therefore, natural that Dr. Grenfell should look for aid in his undertaking to the Dominion government, which should be most vitally concerned in the welfare of the destitute people to whom he ministers. It appears, however, that the Dominion government has recently declined this aid on the ground that it does not wish to establish a precedent. Dr. Grenfell has five thousand dollars for a hospital building at Harrington, which would serve almost five hundred miles of coast. He had hoped to obtain a competent physician to join him in establishing this hospital, but this has, as yet, been impossible, owing to the fact that the Ottawa government has declined to make the somewhat paltry grant neces-

sary. The press of Canada regards this action of the government as wholly unjustified and one paper has signalized it as a national disgrace. As the matter stands, the whole expense must be borne by a missionary society if the projected plan is to be carried out.

We have no means of knowing the exact merits of the case, but it seems apparent that if the work which Dr. Grenfell is doing among the fishermen is in any sense worth while, it should receive the heartiest support of the government most intimately concerned. One need only read Norman Duncan's volume entitled, "Dr. Grenfell's Parish," to become convinced of the necessity of physicians and hospitals in that region, if we as civilized people are in the least to live up to our traditions. Hospitals, no doubt, are needed everywhere, and there are few better ways of spreading both civilization and religion than by this means, but if they are needed elsewhere, the absolute necessity for their establishment and maintenance along the Labrador coast is apparent to any one who investigates the situation. We have no doubt, however, that if the Dominion government persists in its attitude other sources of income will be found which will permit the work already so effectively established, not only to continue, but to increase in scope and usefulness.

REPORT OF COMMISSIONER OF PUBLIC HEALTH FOR THE PHILIPPINE ISLANDS.

ALTHOUGH somewhat belated in appearance, since it covers the period from Sept. 1, 1903, to Aug. 31, 1904, this report is of value and interest as indicating the really excellent progress which is being made by this government in matters of public health in the Philippine Islands. The difficulties which the boards of health in the Philippines have had to meet are naturally the same as elsewhere, but certainly somewhat greater on account of the newness of the field, the natural opposition of the ignorant in matters of reform and the serious character of the diseases which it is necessary to combat. The report is very complete in relation to the details of sanitation which are gradually being adopted and enforced, but of special importance to the medical profession is the progress which is being made both in the study and prevention of infectious and contagious diseases.

Although mosquitoes find many favorable breeding places, there are relatively few which carry the infection of malaria. Yellow fever has never yet been introduced into the Philippine Islands, and it is supposed that the mosquitoes would die in the voyage from yellow fever regions to the Philippines. A complication, however, is likely to come, when the new Panama Canal is completed, inasmuch as the possibility of conveying infected mosquitoes will be thereby materially increased. In Manila during the year under consideration there were 319 deaths from dysentery, one of the most dreaded and fatal of the tropical diseases. Beri-beri, although one of the least feared, is one of the most menacing diseases in the Philippines. Practically the same number died during the year from beri-beri as from dysentery, chiefly among the poorer classes. Leprosy exists throughout the islands to the number of about 5,000 cases, of which less than 500 are cared for in leper institutions. These lepers should certainly be segregated and a bill to this end has been submitted by the board of health. Much space is given in this report to the subject of smallpox and vaccination, with many details of the work done in prophylaxis. During the year there were seventy-three cases in Manila, with thirty-two deaths. The vaccination work, which naturally it has been somewhat difficult to introduce, was systematized by Dr. Edward L. Munson. This scheme involved a plan to vaccinate over seven million persons, and is published in full in the report. Cholera is naturally a disease frequently met with in Manila and other parts of the Archipelago, and this likewise receives careful consideration in the report before us.

In general, the significance of such statistics as those to which we have alluded lies in the fact that absolutely systematic methods, both for the study and prevention of disease, are being rapidly introduced into the Philippines with results which are already manifest in spite of the exceedingly short period of American occupation.

MEDICAL NOTES.

CHOLERA. — The cholera situation in Germany gives evidence of improvement. Up to Sept. 16, one hundred and ninety cases and sixty-nine deaths had occurred in Berlin. Cases apparently are now sporadic and give no fear of further spread of the epidemic.

ENDOWMENT FOR A HOSPITAL FOR THE UNIVERSITY OF MINNESOTA. — It is announced that the University of Minnesota has received an endowment of $175,000 for the erection of a hospital. The money was left by Mrs. A. F. Elliot as a

memorial to her husband, who was a physician. It is proposed to build a hospital at once, which will provide clinics for the department of medicine and a ward for the use of sick students.

The Yellow Fever Situation. — From recent reports the number of cases of yellow fever at New Orleans is larger than was hoped might be the case at this time. Up to the latter part of last week the total number of cases in New Orleans amounted to 2,505 with 331 deaths. On Friday of last week there were forty-three new cases with two deaths, and six new disease centers had appeared. The situation, however, is far more favorable than has been the case in epidemics in previous years in the same localities, due unquestionably to greater knowledge of the disease and means of its prevention.

The Harvey Society Lectures. — The first lecture of the recently organized Harvey Society of New York will be given by Prof. Hans Meyer, the distinguished pharmacologist of the University of Vienna. Professor Meyer will speak in German upon the subject, "*Die Theorie der Narcose.*" The lecture will be held on Saturday, Oct. 7, at half past eight o'clock in the evening, at the New York Academy of Medicine.

The second lecture will be given on Oct. 14, at the same hour and place, by Prof. Carl von Noorden of Frankfurt. The title of Professor von Noorden's lecture is, "Modern Problems of Metabolism." The lecture will be delivered in English.

Other lectures of the course will be given by Profs. L. F. Barker, Howell, Lee, Levene, Mendel, Minot, T. H. Morgan, Novy, Park, Theobald Smith and J. C. Webster.

It is hoped that the Harvey Society may be of use in furthering the wider diffusion of knowledge of the medical sciences. The Harvey Society cordially invites those interested to attend these lectures which will be given at stated intervals during the winter.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, Sept. 20, 1905, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 17, scarlatina 8, typhoid fever 44, measles 9, tuberculosis 42, smallpox 0.

The death-rate of the reported deaths for the week ending Sept. 20, 1905, was 15.61.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, Sept. 16, 1905, is 188, against 212 the corresponding week of last year, showing a decrease of 24 deaths, and making the death-rate for the week 15.61. Of this number 93 were males and 95 were females; 183 were white and 5 colored; 117 were born in the United States, 70 in foreign countries, and 1 unknown; 32 were of American parentage, 142 of foreign parentage, and 14 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 10 cases and no deaths; scarlatina, 12 cases and no deaths; typhoid fever, 51 cases and 8 deaths; measles, 9 cases and 1 death; tuberculosis, 36 cases and 26 deaths; smallpox, no cases and no deaths. The deaths from pneumonia were 9, whooping cough 1, heart disease 19, bronchitis 0, and marasmus 3. There were 11 deaths from violent causes. The number of children who died under one year was 48; the number under five years, 58. The number of persons who died over sixty years of age was 32. The deaths in public institutions were 70.

No deaths nor cases of cerebrospinal meningitis during the week.

Typhoid Fever in Connecticut. — An unusual prevalence of typhoid fever existed in Connecticut during August; 259 cases were reported as against 173 in August of last year. These were widely scattered through the state, being reported from 50 different towns. The disease appeared in epidemic form most distinctly in West Haven and the New Haven almshouse. In West Haven there were 25 cases much scattered through the borough. The epidemic character was evident in the suddenness and limited period of the outbreaks. In the New Haven almshouse 14 cases occurred in quick succession. In both places new cases have nearly or quite ceased. The local health officers have not yet reported the results of their investigations.

NEW YORK.

Laws for the Protection of Children. — Among a number of new laws passed by the last Legislature which went into effect on Sept. 1 were several relating to the protection of children. One of these is the Brackett act, which was introduced at the request of the Society for the Prevention of Cruelty to Children. This amends the law preventing medical men from disclosing any information regarding their patients acquired in a professional capacity, by providing an exception in the case of children less than sixteen years old, when the information indicates that the patient has been the victim or subject of a crime.

MEMORIAL WINDOW TO DR. EDWARD L. TRUDEAU. — There was recently placed in the Church of St. John in the Wilderness, at Paul Smith's in the Adirondacks, a handsome memorial window to the late Dr. Edward Livingston Trudeau, Jr., of Saranac Lake, whose lamented death occurred in New York in 1904. In accordance with a suggestion from Mrs. Anson Phelps Stokes, subscriptions were sent in for this object a number of months ago by young Dr. Trudeau's friends among the campers and summer visitors in the mountains, and the fund thus obtained was placed in the hands of Mr. J. Lawrence Aspinwall, the architect of the church, who undertook to carry out the wishes of those interested in the memorial, which shows a pilgrim in an attitude of reverence and admiration. He holds in his right hand a staff which bears the serpent entwined about it, the symbol of the medical profession. The background is essentially typical of the scenery of the Adirondacks.

PRECAUTIONS AGAINST CHOLERA. — In view of the outbreak of cholera in Germany, and especially of the occurrence of cases at Hamburg, Health Officer Doty is taking extra precautions to prevent the entrance of the disease into the port of New York. At a recent conference with the representatives of the various steamship lines with German terminals he acquainted them with the special regulations which he desired to have enforced in Europe in regard to emigrants, and the promise was made that these should be fully carried out.

MEETING OF ERIE RAILROAD SURGEONS ASSOCIATION. — The fourteenth annual meeting of the Erie Railroad Surgeons Association was held at the Hotel Astor on Sept. 12 and 13. Dr. F. A. Goodwin, of Susquehanna, presided, and more than fifty members were in attendance. The officers of the Erie Railroad having suggested the advisability of some scheme for courses of instruction in first aid to the injured for employees on its lines, the matter was discussed by the Association and measures adopted for providing such courses. In speaking on the subject Dr. C. S. Parkhill, of Hornellsville, N. Y., expressed the opinion that every railroad should have a special "first aid" under the direction of a competent surgeon, and that a sufficient number of employees in all departments should receive instructions to enable them to render aid to the injured. He also advocated the placing of emergency boxes on all trains. "I do not know," he said, "whether or not the Elevated Railway of this city has any provisions for first aid to the injured, but had there been an emergency kit in each car and switch tower, and if the employees had been instructed in the primary principles of taking care of the injured, they could have done some real work and have probably reduced the fatalities in the lamentable accident at Fifty-third Street." A number of papers of practical interest were read, and the following officers were elected: President, Dr. M. S. Cramer, of Ohio City, Ohio; Vice-President, Dr. D. A. Currie, of Englewood, N. J.; Secretary, Dr. J. A. Allis, of Upper Montclair, N. J. On Sept. 14 the members of the society attended a surgical clinic at the Presbyterian Hospital.

MORTALITY STATISTICS. — The monthly bulletin of the State Health Department states that the general mortality in the state in the month of July was excessive, being, in fact, the largest on record for that month. The great mortality was chiefly due to diarrheal diseases, and the statistics show that 21% of the total deaths were due to this cause, while 21% of the deaths were in infants of one year and under. It is noted that this increased mortality from diarrheal diseases was almost entirely in the maritime district of the state.

JEROME PARK RESERVOIR. — The westerly basin of the great Jerome Park reservoir is approaching completion and will be put into service by the end of September. It covers 93 acres, and as soon as it is finished, work will be hurried on the second basin, which will have an area of 160 acres. This reservoir is designed for the storage, for immediate use, of the Croton water supply, and will meet an urgent need of the city, in case of emergency. Without it there would be serious consequences from a break in the long aqueduct.

Miscellany.

PURITY OF WATER SUPPLIES.

A CONVENTION under the auspices of the civil engineers of the New England Water Works Association was held at the Murray Hill Hotel on Sept. 13, 14 and 15. Many of the papers read were on the preservation of the purity of water supplies, and on the last day of the meeting there was a symposium on the use of copper sulphate for purification, which was opened by Dr. George T. Moore of the United States Department of

Agriculture. Among the contributions were the following: D. D. Jackson of Brooklyn read a paper on "Destruction of Typhoid Fever Germs by Copper Sulphate," in which he stated that experiments which he had made demonstrated that one part of the copper salt in 50,000 parts of water was necessary to destroy the typhoid bacillus, and that this amount was larger than could be used with safety. He believed that not more than one part to 100,000 parts of water could be safely employed, and this was insufficient to produce any beneficial results. Prof. Henry Kraemer, of Philadelphia, read a paper on "The Germicidal Properties of Metallic Copper," in which he said that his investigations had convinced him that the introduction of copper foil into water would destroy typhoid germs, and also certain forms of lower animal life. He said that for more than a year past all drinking water used in his own family had been treated with copper, and that all vegetables which were eaten raw were first washed in water so treated. No evil effects upon any member of the family had been observed; on the contrary the health of the household had never been better. He felt positive that copper, in proper quantities, could have no deleterious effect upon the human system. Prof. Herbert E. Smith, of New Haven, read a paper on the "Toxicological Aspects of the Copper Sulphate Treatment," in which he said that copper poisoning was seldom more than temporary in its evil effects, even when the salts of the metal were taken in large doses. He expressed the opinion that copper did not produce chronic poisoning such as is caused by lead and mercury. A single large dose of copper might, indeed, produce acute poisoning, but the continued use of small doses for lengthy periods gave rise to no ill effects. This opinion of Professor Smith, it may be said, is at variance with that of some high authorities in pharmacology. Thus, Dr. R. W. Wilcox, Professor of Medicine and Therapeutics in the New York Post-Graduate Medical School, who has paid special attention to the subject, states that while as a rule no injurious effects appear to result from such introduction of copper into the system, and that while it has been disputed whether chronic copper poisoning occurs in man at all, still, the facts show unquestionably that instances of such chronic poisoning are occasionally met with. It is true, he says, that in a considerable proportion of the cases of chronic poisoning attributed to copper the symptoms have really been due to lead, arsenic and other poisons often associated with copper; but, on the other hand, certain cases come under observation from time to time in which the evidences of chronic poisoning are indisputably due to copper alone.

EPILEPSY AND EYESTRAIN.

Dr. William P. Spratling, in the current number of the *New York Medical Journal*, has added a brief clinical note to the paper he published in *American Medicine*, April 9, 1904, on the Nonoperative Relief of Eyestrain for the Possible Cure of Epilepsy as Tested in 68 Cases at the Craig Colony." He says:

"As a result of this test, so painstakingly made by Dr. Gould and Dr. Bennett, one patient only seemed to show a possible recovery from the use of glasses. I can best state the case by quoting from the article in question:

"'One male patient (O. B., No. 3), who had 27 attacks between January and September, 1902, had 4 in September, 4 in October and 4 in December; 12 in all, after he commenced wearing glasses on Sept. 1, 1902. After January, 1903, he had no further attacks up to the date on which this was written, Dec. 1, 1903, a period of eleven months.

"'His attacks were all *grand mal*, and of great severity, and were announced some time in advance by a motor aura in the form of a quick, jerking movement in one hand. After a few minutes, the hand, after being lifted higher with each movement, would be jerked straight above the head each time. As soon as the acme of this warning was reached, a similar movement commenced in the left hand, and went through the same order, the attacks appearing after both hands were simultaneously jerked above the head.

"'The patient lives an active, outdoor life, is robust and strong in every respect, and has had epilepsy since his seventeenth year, his present age being thirty-eight years.

"'He shows a slight degree of epileptic irritability at times, but nothing in the way of permanent mental enfeeblement.

"'He is, or was, an excellent illustration of a motor epileptic, the type in which motor manifestations are marked to the exclusion of those that involve the psychic side.

"'The arrest in his disease now bids fair to pass into complete and lasting recovery.'

"It is a matter for regret that the arrest in this patient's disease, which seemed at one time to bid fair to pass into recovery, did not fulfil such a promise.

"After being fitted with glasses on Sept. 1, 1902, this man had no seizures during the remainder of that or during the following year.

"In January, 1904, his glasses were broken, and while not wearing them he had several attacks, 4 in January, 6 in March and 4 in April. The 6 in March and the 4 in April occurred *after* he had again put on glasses. After April he had no more attacks during 1904, but they recommenced in January, 1905. In that month he had 1, in February, 5; in March, 8; in April, 4; in May, 7; in June, 4, and in July, 5. He had worn glasses constantly.

"The sole point to which I wish to call attention is that the glasses in this case seemed to *repress* the epileptic attacks in a manner not unsimilar to the *repression* that is often secured by the use of the bromides, and that, like the bromides, while they mitigate the disease, they are without power to cure."

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, SEPT. 9, 1905.

CITIES.	Population.*	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diphtheria and croup.	Typhoid Fever.	Cerebro-spinal Menin-gitis.
New York . .	3,908,644	1,330	477	34.71	5.53	1.14	1.87	.97
Chicago . . .	1,990,780	500	204	39.40	5.60	1.60	1.00	—
Philadelphia	1,407,968	374	116	34.22	5.61	1.07	3.20	.70
St. Louis . .	633,606	—	—	—	—	—	—	—
Baltimore . .	542,229	193	75	37.68	4.61	.52	4.18	.52
Cleveland . .	444,251	—	—	—	—	—	—	—
Buffalo . . .	400,645	—	—	—	—	—	—	—
Pittsburg . .	362,403	—	—	—	—	—	—	—
Cincinnati . .	338,277	—	—	—	—	—	—	—
Milwaukee . .	325,990	—	—	—	—	—	—	—
Washington .	300,776	—	—	—	—	—	—	—
Providence . .	196,744	44	14	29.55	2.27	—	2.27	—
Boston . . .	593,598	200	72	30.00	6.50	.50	.50	—
Worcester . .	127,963	39	11	20.51	10.26	2.56	5.13	2.56
Fall River . .	105,697	37	15	48.65	2.70	5.41	—	—
Cambridge . .	97,426	25	11	32.00	8.00	—	—	—
Lowell . . .	94,845	35	11	22.86	17.14	—	—	5.71
Lynn	77,025	17	7	17.65	—	—	—	—
New Bedford	74,321	30	16	40.00	6.67	3.33	—	—
Springfield .	73,484	18	6	22.22	5.56	5.56	5.56	—
Lawrence . .	69,939	33	17	12.12	9.09	—	6.06	—
Somerville .	68,188	24	10	4.17	—	—	—	—
Holyoke . .	49,124	10	4	40.00	—	10.00	—	—
Brockton . .	47,782	4	—	50.00	—	—	—	—
Malden . . .	37,980	2	1	—	50.00	—	—	—
Haverhill . .	37,818	13	2	7.69	7.69	—	—	—
Salem . . .	37,586	11	8	45.45	—	—	—	—
Chelsea . . .	37,277	13	7	—	—	—	—	—
Newton . . .	36,694	13	2	—	15.35	—	—	—
Fitchburg . .	33,017	9	5	—	—	—	—	—
Taunton . . .	30,952	17	5	35.29	5.88	—	5.88	—
Everett . . .	29,108	5	1	40.00	—	20.00	—	—
Quincy . . .	28,067	5	2	20.00	20.00	—	—	—
Waltham . .	26,239	7	2	14.29	—	—	—	—
Gloucester .	26,008	—	—	—	—	—	—	—
Pittsfield . .	25,000	5	2	40.00	—	—	20.00	—
Brookline . .	23,424	5	2	20.00	—	—	—	—
North Adams	22,125	3	2	66.67	—	—	—	—
Chicopee . .	20,187	6	5	50.40	—	—	—	—
Northampton	19,942	5	0	—	—	—	—	—
Medford . . .	19,638	4	1	100.00	—	—	—	25.00
Beverly . . .	15,222	3	1	33.33	—	—	33.33	—
Newburyport	14,673	4	3	—	—	—	—	—
Hyde Park . .	14,492	5	4	20.00	—	—	—	—
Woburn . . .	14,401	—	—	—	—	—	—	—
Melrose . . .	14,294	5	2	20.00	—	—	—	—
Leominster .	14,290	—	—	—	—	—	—	—
Marlboro . .	14,072	3	0	33.33	—	—	—	—
Westfield . .	13,609	3	2	33.33	—	—	33.33	—
Clinton . . .	13,105	6	4	83.00	—	16.67	16.67	—
Peabody . . .	13,097	—	—	—	—	—	—	—
Attleboro . .	12,702	—	—	—	—	—	—	—
Revere . . .	12,647	2	1	50.00	—	—	—	—
Adams . . .	12,482	2	—	100.00	—	—	50.00	50.00
Milford . . .	12,105	—	—	—	—	—	—	—
Gardner . . .	11,981	4	2	50.00	—	—	—	—
Weymouth . .	11,585	0	—	—	—	—	—	—
Framingham .	11,549	—	—	—	—	—	—	—
Watertown . .	11,302	2	1	—	—	—	—	—
Plymouth . .	11,118	—	—	—	—	—	—	—
Southbridge .	10,947	2	2	100.00	—	—	—	50.00
Wakefield . .	—	2	2	—	—	—	—	—

*The population given for cities outside of Massachusetts is estimated. Those of Massachusetts are from the Census of 1905.

Deaths reported, 2,979; under five years of age, 1,137; principal infectious diseases (smallpox, measles, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 1,009; acute lung diseases 165, consumption 329, scarlet fever 3, whooping cough 27, cerebrospinal meningitis 22, smallpox 0, erysipelas 3, puerperal fever 14, measles 10, typhoid fever 61, diarrheal diseases 503, diphtheria and croup 36.

From whooping cough, New York 7, Chicago 7, Philadelphia 5, Baltimore 4, Cambridge 2, Lowell 1, Taunton 1. From scarlet fever, New York 2, Philadelphia 1. From cerebrospinal meningitis, New York 12, Philadelphia 3, Baltimore 1, Worcester 1, Lowell 2, Medford, Adams and Southbridge, 1 each. From erysipelas, New York Boston and Revere 1 each. From smallpox 0. From typhoid fever, New York 23, Chicago 5, Philadelphia 12, Baltimore 8, Providence 1, Worcester 2, Lawrence 2, Boston, Springfield, Taunton, Pittsfield, Beverly, Clinton, Westfield and Adams, 1 each.

In the seventy-six great towns of England and Wales, with an estimated population of 15,609,377, for the week ending Sept. 2, 1905, the death-rate was 17.3. Deaths reported 5,189; acute diseases of the respiratory organs (London) 60, whooping cough 73, diphtheria 35, measles 66, smallpox 0, scarlet fever 44.

The death-rate ranged from 4.3 in Hornsey to 26.6 in Sunderland; London 17.2, West Ham 17.0, Brighton 14.8, Southampton 18.2, Plymouth 19.3, Bristol 12.5, Birmingham 17.3, Leicester 17.1, Nottingham 14.1, Birkenhead 13.9, Liverpool 22.4, Wigan 20.5, Bolton 21.1, Manchester 22.6, Salford 21.6, Halifax 12.5, Bradford 12.5, Leeds 14.6, Hull 19.4, Sheffield 19.9, Newcastle-on-Tyne 19.5, Cardiff 14.2, Rhondda 21.3, Merthyr Tydfil 18.4, Hastings 17.2, Grimsby 25.2.

METEOROLOGICAL RECORD.

For the week ending Sept. 9, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

DATE	Barometer.	Thermometer.			Relative humidity.			Direction of wind.		Velocity of wind.		We'th'r *		
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A.M.	8.00 P.M.	Daily mean.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	Rainfall in Inches.
S. . 3	30.13	66	70	63	95	95	95	S E	S	16	15	R.	R.	2.98
M. 4	29.96	70	73	65	95	90	92	S	W	8	5	R.	O.	1.73
T. . 5	29.98	72	81	63	92	76	84	W	W	6	10	O.	C.	0
W. . 6	29.94	67	74	60	74	84	79	W	W	8	6	O.	C.	.01
T. . 7	30.01	64	69	58	74	89	82	N W	S E	10	3	C.	C.	.02
F. . 8	30.14	64	72	55	71	60	66	N	W	9	6	C.	C.	0
S. . 9	30.24	66	76	57	70	83	76	N W	S	5	4	C.	C.	0
☞	30.05		74	60			82							4.64

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Means for the week.

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING SEPTEMBER 16, 1905.

J. R. WAGGENER, medical director. Detached from the Navy Yard, Mare Island, Cal., and ordered home to wait orders.

F. ANDERSON, medical director. Detached from the Marine Barracks, Washington, D. C., Sept. 12, and ordered to the Navy Yard, Mare Island, Cal., for duty as medical officer of that yard and in command of the Naval Medical Depot.

W. A. MCCLURG, medical inspector. Detached from the Bureau of Medicine and Surgery, Navy Department, and ordered to the Marine Barracks, Washington, D. C., Sept. 18.

A. M. D. MCCORMICK, surgeon. Ordered to the Naval Academy.

C. H. T. LOWNDES, surgeon. Detached from the Naval Academy and ordered to the "Texas."

H. A. DUNN, passed assistant surgeon. Ordered to the Naval Proving Ground, Indian Head, Md., Sept. 15.

The following assistant surgeons have been ordered to report at the U. S. Naval Medical School, Washington, D. C., Sept. 30, for course of instruction: F. M. SHOOK, C. M. OLSON, R. A. WARNER, F. H. BROOKS, E. O. J. EYTINGE, P. R. STAHLNAKER, F. S. SELLERS, C. D. MUNGER, B. ELMORE, H. T. NELSON, N. S. HATHAWAY, J. B. MEARS, E. R. MARSHALL.

R. C. FARWELL, assistant surgeon. Detached from the "Brooklyn" and ordered to duty on the second torpedo flotilla on the "Worden."

G. G. HART, acting assistant surgeon. Ordered to the "Glacier."

RECENT DEATH.

JAMES ARTHUR MAHON, M.D., M.M.S.S., of Dorchester, died Sept. 14, 1905, aged forty years.

BOOKS AND PAMPHLETS RECEIVED.

Human Physiology. Prepared with Special Reference to Students of Medicine. By Joseph Howard Raymond, A.M., M.D. Third Edition. Thoroughly Revised. Illustrated. Philadelphia and London: W. B. Saunders & Co. 1905.

The Ready Reference Handbook of Diseases of the Skin. By George Thomas Jackson, M.D. Fifth edition, thoroughly revised. Illustrated. New York and Philadelphia: Lea Brothers & Co. 1905.

Manual of the Diseases of the Eye. For Students and General Practitioners. By Charles H. May, M.D. Fourth edition, revised. Illustrated. New York: William Wood & Co. 1905.

Original Articles.

THE MECHANISM OF THE NORMAL SPINE AND ITS RELATION TO SCOLIOSIS.[1]

BY ROBERT W. LOVETT, M.D., BOSTON.

THE present paper is an attempt to investigate the normal movements of the human spine and their relation to scoliosis. It is a carrying forward of certain preliminary work already published in which three points in spinal movements were demonstrated and considered in their bearing on scoliosis. These points were:

(1) Side bending and rotation of the spine are parts of one compound movement and cannot be disassociated. There are, therefore, only three spinal movements, (*a*) flexion or forward bending; (*b*) extension or backward bending, and (*c*) side-bending rotation.

(2) The rotation which accompanies side bending varies widely in its type between side bendings given in the flexed position of the spine and side bendings in the hyperextended position.

(3) Every rotation movement of the spine must be accompanied by side bending or lateral curving of the spine.

In the present paper after a statement of the conditions under which the work was done, there will follow, (*a*) a description of each of the spinal movements; (*b*) a description of the characteristic movements in the cervical, dorsal and lumbar regions, and (*c*) an application of these facts to the question of scoliosis.

The study of scoliosis has been made almost wholly from the pathological end. This method has contributed to us a great amount of information and has done much to clear up the subject, but of late little progress has been made. It is as if one undertook, for example, to investigate a railroad accident solely from a study of the wrecked cars. Much could be learned as to the effect and direction of the destructive forces, the amount of force expended, and the kind of damage done, but more could be learned and future accidents could be better prevented by a study of the normal running time of the trains, their proper relation to each other at the time of the accident, and by an investigation of the signal system and the routine precautions adopted. In a similar way we have, I think, much to learn from the normal spine that might help our study of scoliosis. Its normal mobility, its restrictions, and its weakest points of resistance might all form part of our knowledge.

In an attempt to carry on my investigation from the point mentioned the literature was first looked into. The Weber Brothers, v. Meyer, Volkmann, Hughes, Schulthess and others have contributed to our knowledge, but nowhere can be found an accurate, concise, clean-cut description of spinal movements. It, therefore, remained to attack the question of normal spinal movements and the same course as in the previous investigation was adopted. Observations were made on the cadaver, these were checked on a living model and on living children.

The anatomical work was done in the Anatomical Department of the Harvard Medical School under the supervision of Prof. Thomas Dwight to whom I am indebted for constant counsel and help as well as for an abundant supply of anatomical material; and from Mr. Charles P. Heath, of the second-year class of the Harvard Medical School, I had the greatest help and the most painstaking assistance throughout.

The material at my disposal was as follows:[2]

Cadaver 1 was a young male negro of twenty, in an excellent state of preservation with a movable spine. The viscera and thorax were intact, except for a split in the sternum for injection. This was later wired together. Cadaver 2 was a female of twenty-three, also in good preservation, with a movable spine. The viscera were in place and the sternum which had been split for injection was wired firmly together. In this cadaver the head, arms and legs were removed at the outset and the pelvis imbedded in plaster of Paris. The model was a professional female model of twenty-two, markedly flexible and symmetrical. I had at my disposal a clinic of some two hundred cases of lateral curvature and round shoulders in children from five to fifteen, for permission to use which material I am indebted to my colleagues.

With regard to criticisms which apply to generalizing from what is seen in the cadaver to what must happen in the living spine the following facts were borne in mind: (1) The muscles are absent so far as function goes. (2) The cadaver is generally less flexible than the living subject. (3) The drying of the tissues induces unnatural limitations. (4) The constant manipulation may loosen certain joints and distort motions. (5) One obvious criticism applying to most work on the cadaver has been avoided by doing most of the work on cadavera intact, with the thoracic and abdominal contents *in situ*.

In the analysis of the separate movements of the spine, although careful measurements were taken of each movement, the most reliable method was found to consist in observation of the individual pins which were driven into each spinous process. Although at first it was my intention to present a detailed analysis of spinal movements, especially rotations, in figures, angles and arcs, after taking many measurements I became convinced that such figures would be of little real value and that the time at my disposal would be better expended on a study of the gross properties of the different regions and an analysis of movements over a wider field of material, than in an exhaustive analysis of the minute characters of the movements in one cadaver, for only in the cadaver can accurate measurements be made.

In the model, lead strip tracings and photographs were used and tracings of side curves

[1] Read by invitation before the Congress of the German Orthopedic Association in Berlin, April 25, 1905.

[2] The experiments on the cadaver were made in the Anatomical Department of the Harvard Medical School. Much of the clinical work is from the Lateral Curvature Clinic of the Children's Hospital.

were taken on crinoline gauze laid over the back through which the spinous processes were felt and marked. The same methods were also followed in the cadaver. The methods adopted in the study of the different regions will be explained in discussing that part of the subject.

I. A DESCRIPTION OF THE MOVEMENTS OF THE SPINE.

The spine as a whole. — Investigation of the spine after the removal of the head, arms and legs showed a practical point, namely, that the human spine is not an extremely flexible body taken by itself but that much of its apparent flexibility is due to accessory movements between the spine and the pelvis and the head. An extreme forward flexion, *e. g.*, in the living model or the intact cadaver, with the flexed head, the drooping shoulders and the rotated pelvis implies a greater curve than the spine itself possesses. It was surprising to see how little actual mobility was possessed by the three regions of the spine considered separately, or by the whole spine.

The application of this is obvious without extended comment. If active or passive exercises are given which are intended to take effect upon the spine alone and to be effective there, the pelvis must be fixed. If this is not done, part of the muscular force is used in displacing the pelvis to the opposite side to balance the body, and the movement becomes a general and not a spinal one. (Figs. 1 and 2.)

Flexion (forward bending) appears to be a pure antero-posterior movement without perceptible rotation.[3] It is the most evenly distributed of the spinal movements, and in extreme flexion the outline of the tips of the spinous processes forms a curve approaching the arc of a circle. Most of the movement is accomplished in the lumbar region which in extreme flexion loses most of its forward convexity, but in the observations made was not observed to become convex backwards. (Figs. 3, 4, 5.)

The dorsal region in extreme flexion becomes decidely more convex than in the upright position. The twelfth dorsal vertebra takes part in flexion more as a lumbar than as a dorsal vertebra and free movement occurs below it and fairly free movement between the eleventh and twelfth vertebræ.

The cervical region cannot be accurately observed or measured in the model. In the cadaver it dried so rapidly while the other observations were being made that no conclusions can be drawn beyond the statement that its forward convexity may be obliterated by forcible flexion with the hands.

The most marked flexion of the spine was obtained by having the model sit cross-legged and bend forward with the chest between the knees, and extreme passive flexion with the model lying on the side was not so great as was obtained by flexion in the cross-legged position. There seemed to be no constant difference in the amount of flexion obtained in the standing and sitting positions, the resultant curve being practically the same. The chief difference between flexion in the model and cadaver seemed to consist in a greater relative participation of the dorsal region in flexion in the model.

It is noteworthy that measurements and tracings of the spine in the model and in children show the relaxed sitting position to be one of slight flexion.

In the spine of cadaver 1, the laminæ and pedicles were removed and the column of bodies was studied alone. The character and distribution of the flexion were not changed.

In flexion the distance of the seventh cervical vertebra from the sacrum when measured along the spinous processes is increased over the same measurement taken in standing or lying. In cadaver 1, the distance was 46 cm. lying flat and 52.5 cm. in full flexion.

In the model, the distance from the seventh cervical vertebra to the fifth lumbar, measured over the spinous processes, was, in the erect standing position, 43.5 cm., and in full flexion from the erect position 51 cm. These figures show an increased length in the dorsal and lumbar spines, measured along the spinous processes, of 6.5 cm. in the cadaver, and 7.5 cm. in the model in flexion over the erect or prone position.

Measurements of the spine in the model taken from 7th cervical vertebra to and including the 5th lumbar, over the spinous processes were as follows:

Passive Movements.— Standing, erect, pelvis free, 43.5 cm.; extreme flexion, pelvis free, 51 cm.; extension, pelvis free, 38 cm.

Sitting, pelvis free, relaxed (that is, natural position), 46.5 cm.; extreme flexion, 51.5 cm.; extension, 38.5 cm.

Standing, pelvis fixed, erect, 44 cm.; extreme extension, 37 cm.

Sitting, pelvis fixed, relaxed, 46 cm.; extreme extension, 39.5 cm.

Active Movements. — Standing, unsupported, pelvis free, erect, 44 cm.; extreme extension, 41.5 cm.; pelvis fixed, extreme extension, 40.5 cm.

Hyperextension (backward bending). — Hyperextension appears to be a pure antero-posterior movement of the spine without perceptible rotation. It is not an evenly-distributed movement, but occurs almost wholly in the lumbar and lower two dorsal vertebræ. A tracing taken over the spinous processes in extreme hyperextension in outline resembles a hockey stick. The dorsal region is but little affected, being slightly straightened by hyperextension. The bending reaches to about the tenth dorsal, the upper dorsal region showing but little diminution in the physiological curve, the twelfth dorsal vertebra, and, to a certain extent, the eleventh, behaving as do the lumbar vertebræ in hyperextension. The curve taken over the spinous processes was more marked in cadaver 2, a female with a naturally arched back, and in the model than in cadaver 1, a male with a less marked lumbar physiological curve. The character of the curve obtained in marked hyperextension was practically the same, whether it was obtained by active or passive means and whether the model was lying on the face or on

[3] De la Escoliosis. Saturnino Garcia y Hurtado, Madrid, page 19.

the side, or standing, or sitting. The column of bodies alone showed the same character and distribution of the movement as did the intact spine of cadaver 1. The illustration in this case shows the characteristic rigidity of the dorsal region to hyperextension. (Figs. 6, 7, 8.)

In hyperextension, the distance from the seventh cervical vertebra to the sacrum, measured over the spinous processes, is decreased from the same measurement taken in the erect position.

In cadaver 1, the distance from the seventh cervical vertebra to the fifth lumbar in the prone position of the body was 46 cm., and in hyperextension, 38.1 cm. In the model measurements taken in the same way with the pelvis fixed were 44 cm. for the erect position, and 37 cm. in hyperextension. These figures represent a decrease in length of the dorsal and lumbar spine, in hyperextension from the erect position, of 7.9 cm. in the cadaver, and in the model of 7 cm.

The entire shortening of the dorsal and lumbar spine, measured over the spinous processes, from extreme flexion to the hyperextended position, was, in cadaver 1, 14.4 cm., and in the model, 14.5 cm.

From measurements taken of the model standing, sitting, and with the pelvis fixed and free in both positions, it was found that the amount of hyperextension does not vary appreciably in these positions, and that the extreme of the movement is not affected by fixation or freedom of the pelvis. Active hyperextension in the model is much less free than the passive movement, in all positions; but the extreme of active hyperextension again is not affected by fixation or freedom of the pelvis.

Side bending. — Although side bending is to be considered as one part of a compound movement of which twisting or rotation forms the other part, for purposes of simplicity, the element of side bending, that is, the side deviation of the spine from the sagittal plane, will be considered by itself in this connection.

In describing this side bending it must be stated that the character and distribution of the movement vary widely according to the degree of flexion or extension of the spine when the side bending is made. It is also affected if the spine is twisted before it is bent to the side. In other words, there is no one type of spinal side bending as there are types of flexion and extension, but the character and distribution of the movements are wholly dependent upon the antero-posterior position of the spine.

Side bending will first be considered alone without regard to the rotation caused by it, and then the rotation accompanying each kind of side bending will be described.

Side bending in lying on the face shows a more evenly distributed lateral curve than does that in the erect position. The character of the curve did not change essentially when the shoulders and pelvis were held and the middle of the trunk pushed to one side. The curve in this position of the spine is greater in the upper lumbar vertebræ and in the two lower dorsal than in the upper part of the spine.

Rotation accompanying side bending lying on the face. — With the cadaver lying flat on the face on the table no rotation in side bending was found by v. Meyer and in some experiments by Schulthess; it was, however, found by Benno Schmidt.[4] With the cadaver lying prone on a table the conditions, of course, are against rotation, the thorax and shoulders being to a certain extent held against it by the surface of the table. In cadavers 1 and 2 no perceptible rotation was noted in slight side bending under these conditions, but the vertebral bodies turned to the concave side in marked side bending. In the model lying flat on a table one side of the chest was felt to press on the table harder than the other in moderate side bending. The point is not of great importance as the practical problem is that of the behavior of the weight-bearing spine.

Side bending in the flexed position of the spine is a more evenly distributed movement in which the dorsal region participates more and the lumbar region less than in the erect position. The greatest deviation from a line connecting the two ends of the spine occurs at about the eighth dorsal vertebra in both cadaver and model. In short, side bending occurs higher in the spine in flexion than in any other position, the lumbar region being comparatively locked against side bending by the flexed position. The more marked the flexed position, the higher in the spine is the side bending localized. (Figs. 9, 10.)

Rotation accompanying side bending in flexion. — In the flexed position of the spine, side bending is accompanied by rotation of the bodies to the convexity of the lateral curve.[5] This rotation occurs chiefly in the dorsal region, the lumbar region seeming to be locked against side bending by the flexed position. The so-called flexion rotation which accompanied side bending described in my former papers is, therefore, to be classed as a dorsal phenomenon, and might perhaps better be spoken of as dorsal rotation. The same phenomena were observed in the cadaver, the model and the child, and followed the same rule observed in earlier experiments. One practical point was noticed and confirmed in the cadaver, viz., that rotation in this position was less marked in the two cadavers with an intact thorax than in those from which the sternum had been removed. Another point possibly of practical importance is that in side bending of the model in the flexed position the active movement is accompanied by a much greater degree of rotation than is the passive movement, the addition of muscular force in this movement seeming to accentuate the element of twisting.

The column of vertebral bodies alone from cadaver 1 rotated in flexion side bending in the same way as did the intact spine. (Fig. 11.)

Side bending in the erect position. — This is, of course, the most important aspect of the question of side bending, so far as scoliosis is concerned. In the cadaver the side bending is most marked

[4] Schulthess: Zeit. f. Orth. Chir., x. 3, p. 487.
[5] R. W. Lovett: Mechanics of Lateral Curvature, Boston Medical and Surgical Journal, Oct. 31, 1901; June 14, 1900.
Mechanics of the Spine, Am. Journ. of Anatomy, ii, 4, 457.
Forcible Correction of Lateral Curvature, Boston Medical and Surgical Journal, March 17, 1904.

below the tenth dorsal vertebra, and the dorsal region shares but slightly. The lumbar region is most affected in its upper part, but shares to some extent throughout. The whole dorsal region takes some part in the movement, but the dorsal region, except its lower part, compared to the lumbar is resistant to side bending. Side bending in the erect position is, therefore, largely a movement occurring in the neighborhood of and below the lumbar dorsal junction.[6] It shows the same characteristics in the cadaver, the model and the child, except that in the two last named the dorsal region takes a greater relative part than in the cadaver. (Figs. 12, 13.)

The column of vertebral bodies alone behaves in side bending in all positions in the same way as do the intact cadaver, the model and the child.

Rotation accompanying side bending in the erect position. — In this position side bending causes the rotation of the bodies of the vertebræ to the concave side of the lateral curve. It occurs lower down in the spine than in the flexed position. The dorsal region participates less and the lumbar region more in the movement.

Side bending in the hyperextended position of the spine. — With the spine of the cadaver, model or child hyperextended, the side bending becomes a sharply limited movement, localized low down in the spine and occurring almost wholly below the eleventh dorsal vertebra becoming, therefore, essentially a lumbar movement. The dorsal region bends as a whole upon the lumbar and rocks over to the side practically unchanged being locked against side-bending by the hyperextended position. Side bending, therefore, is situated highest in the flexed position, lower down in the erect position, and lowest in hyperextension in the model, cadaver and child. In side bending in all positions the twelfth dorsal vertebra behaves as a lumbar, not as a dorsal, vertebra. (Figs. 14, 15.)

Rotation accompanying side bending in the hyperextended position. — This is a sharply limited movement occurring in the lumbar region including the twelfth dorsal as functionally a lumbar vertebra. The thorax rocks over to the side unchanged and the rotation of the bodies is to the concave side of the lateral curve. The rotation accompanying this type of side bending is essentially a different kind of motion from that occurring in side bending in flexion as it is less distributed through the spine and is of a more decided character. The column of bodies alone rotates in essentially the same way as does the intact spine in side bending in the erect and hyperextended position. (Fig. 16.)

Rotation accompanying side bending is, therefore, of a different type in the flexed position of the spine from what it is in the erect or hyperextended position. In the flexed position the lumbar region is locked against side bending, and the side bend and rotation occur chiefly in the dorsal region and conform to the dorsal type, *i. e.*, the bodies turn to the convexity of the lateral curve. In side bending occurring in the erect or hyperextended position, however, the lumbar region and lumbar dorsal region is the chief seat of the movement, and as in all side bends in this lumbar region the bodies of the vertebræ turn to the concavity of the lateral curve.

Rotation. — Rotation or twisting of the spine is to be considered as part of a compound movement of which side bending forms the other part. For purposes of simplicity the rotation element of the movement will be considered by itself. Under ordinary conditions it is essentially a movement of the dorsal and cervical regions in which the lumbar vertebræ take but little part except in hyperextension and with the use of traction. The lumbar vertebral region possesses some power of rotation as has been generally observed.[7]

The measurement of this will be alluded to later. Although many measurements were taken of the amount of spinal rotation they cannot be regarded as of practical value as the amount of twisting obtained varied with the degree of force used and the position of the cadaver.

Measurements of rotation in flexed and hyperextended positions of the cadaver were so complicated on account of the different planes involved that they gave no trustworthy results. The observation of the pins and the photographic method were, therefore, adopted, and the movement will be described in its general aspects.

Rotation in the erect position. — Rotation is freest in the erect position and is situated in the cervical and dorsal regions, reaching its maximum at the top of the cervical column and extending down the spine to the lower dorsal region where it disappears. With very forcible rotation applied to the top of the column in the cadaver, the first and even the second lumbar vertebræ may be rotated. The rotation in this position is accompanied by a side bend of the rotated region away from the side to which the bodies of the vertebræ turn. If the rotation is to the right it is accompanied by a bend convex to the left and *vice versa*. In the model an active rotation to the right is accompanied by a displacement of the trunk to the left side and *vice versa*. (Figs. 17, 18.)

Rotation with traction in the erect position. — If traction is applied to the head of the erect cadaver, forcible twisting of the head results in rotation of the lumbar vertebræ including the fourth. In cadaver 1 a rotation in the erect position without traction made by moderate manual force resulted in rotation down to and including the eleventh dorsal vertebra. Traction of thirty-eight pounds was then applied to the head and approximately the same rotation force applied. The rotation was markedly increased and extended down further and included the fourth lumbar vertebra which rotated noticeably. In cadaver 1 with the spine erect, but

[6] See Lüning and Schulthess: Orth. Chir. München, 1901, p. 132, fig. 51.

[7] Hughes: Archiv für Anatomie, etc., 1892, p. 265.
Archiv. für Anat. & Phys. 1827, p. 240.
Henke: Anat. und Mech. der Gelenke, Leipsig, 1863, 69.
Meyer: Statik. und Mech. des mench Knockengerüstes, 1873, 2, 12.
Morris: Anat. of the Joints, London, 1879, p. 79.
Volkmann: Virchow's Archiv, bd. 56, 1872, 4, 66.

with no traction, rotation force was applied to the head. While the head was held rotated traction was applied. The spine lengthened noticeably and the rotation extended well down into the lumbar region. Lumbar rotation disappeared as traction was removed. In the intact cadaver 1 with traction on the head the application of a moderate rotation force to the top of the column resulted in approximately 12° of rotation of the first lumbar vertebra on the sacrum. (Figs. 19, 20.)

Rotation of the flexed spine. — Rotation in the flexed position of the spine occurs chiefly in the cervical and upper dorsal spine. The lower dorsal and lumbar region seeming locked against rotating forces by the flexed position. The more extreme the flexion the more markedly in cadaver, model and child is the rotation restricted to the cervical and upper dorsal spine. In cadaver 1 and in the model, forcible rotation in marked flexion seemed to be limited to the region above and including the seventh or eighth dorsal vertebræ. (Figs. 21, 22.)

Rotation of the hyperextended spine. — In hyperextended positions rotation with moderate manual force occurs as a twisting of the whole thorax on an axis in the dorso-lumbar region, the upper and mid-dorsal regions apparently being locked against rotation by hyperextension. The site of rotating movement in this position is, therefore, in the one of two vertebræ above and the one or two vertebræ below the dorso-lumbar junction.

Rotation, therefore, is located high in flexed positions, lower in erect positions, and is situated lowest and is of a different type, being more sharply localized, in hyperextended positions. In the column of bodies alone rotation possesses the same characters as does the intact column. (Fig. 23.)

Side bends accompanying rotation. — A lateral deviation of the spine accompanies all rotations. It is situated at the site of the rotation and is convex to the right when the rotation is to the left and *vice versa*. In the erect position rotation causes a marked side curve in the dorsal region.

Combined positions. — In the model and cadaver, if a position of flexion is assumed and the body bent to the right, there will, of course, be found associated with the left convex side curve a rotation of the vertebral bodies to the left, and the left shoulder will be elevated. If now one attempts to see whether the rotation or side bend can be most easily overcome by passive manipulation it will be found that the rotation cannot be corrected while the spine is bent to the right but that the lateral curve can be straightened without disturbing the rotation. The inference is that in a combination of side bending and rotation in flexion the rotation element is the more persistent.

II. The Characters of the Movements in the Three Regions of the Spine.

In attempts to study more carefully the character of the movements in the separate regions of the spine, four cadavers were utilized, two being those described above as cadavers 1 and 2. In a third cadaver the lumbar region was fixed by nailing the lumbar vertebræ together, and the dorsal region was studied alone. In another cadaver a detached thorax alone was studied and photographed. In cadaver 1 a heavy brass rod was thrust down through the vertebral canal as far as the twelfth dorsal vertebra to stiffen the dorsal region and the lumbar region was thus studied alone. In cadaver 2 the three regions were cut apart and studied separately. In the model it was attempted to fix the thorax by a steel brace consisting of two heavy uprights at the back reaching from the cervical region down as far as the twelfth dorsal vertebra, two lighter uprights on the side with crutches, a steel chest piece, and a circular steel band embracing the lower chest. This brace did not, of course, rigidly fix the dorsal spine, but prevented free movement.

The Cervical Region.

The observations in this region were unsatisfactory because in the living model the region cannot be studied, and in the cadaver it inevitably dried while the other work was being done.

Flexion. — It is possible to straighten the anterior physiological curve, but in the dried specimen it was not possible to do more. Much of the apparent forward flexion in the cervical region in life is evidently due to the motion between the occiput and the atlas.

Hyperextension. — The physiological curve can be increased to a certain extent.

Side bending. — Side bending is uniformly distributed throughout the cervical region and is accompanied by rotation of the bodies of the vertebræ to the concavity of the lateral curve, as in the lumbar region. Rotation and side bending seemed always associated.

Rotation. — Rotation is extremely free between the first and second cervical vertebræ, but for the rest of the region it is limited. Rotation is accompanied by a side bend convex to the side opposite to which the bodies of the vertebræ turn, that is, in a right rotation the curve is convex to the left. The rotation of the first vertebra on the second was about 45° in cadaver 2. Although but little importance can be attached to these observations on account of the drying of the region the mobility of the cervical region considered by itself is disappointing and less than had been expected from the study of the intact cadaver and the living model.

Dorsal Region.

The dorsal region is the least mobile part of the spine as a whole. The twelfth dorsal vertebra from the point of view of function must be regarded as a lumbar vertebra and not as part of the dorsal region.

Flexion. — The dorsal spine already convex backward can be made somewhat more convex by forward bending, but the extent of the movement is not great and by no means comparable to the same movement in the lumbar region. (Fig. 24.)

Measurements were taken by pins driven into each dorsal spinous process in cadaver 2 as to the distribution of the flexion movement in the dorsal region. These measurements were taken 10 cm. up from the skin and before the dorsal region was separated from the lumbar.

The extreme flexion length from 1st dorsal to 12th dorsal, inclusive, 31.3 cm.

The extreme extension length from 1st dorsal to 12th dorsal, inclusive, 27 cm.

The extreme flexion length from 1st dorsal to 11th dorsal, inclusive, 27 cm.

The extreme extension length from 1st dorsal to 11th dorsal, inclusive, 26 cm.

The extreme flexion length from 2d dorsal to 11th dorsal, inclusive, 23.5 cm.

The extreme extension length from 2d dorsal to 11th dorsal, inclusive, 23 cm.

In a tracing of the spine of the model in the erect position a line connecting the seventh cervical and twelfth dorsal vertebræ was 36 cm. long, and a perpendicular erected on it measured to the point of the greatest dorsal curve was 3 cm.; in extreme flexion, the same line was 34.5 cm. and the perpendicular was 5 cm.

Hyperextension. — Hyperextension is a motion of very slight extent in the dorsal region. (Fig. 25.) It consists of a diminution of the backward convexity and is most noticeable in the lower half of the region. In the model, in extreme hyperextension, a tracing of the outline of the spinous processes in the dorsal region made a straight line. In tracings of the two cadavers in the extreme hyperextended position, the backward convexity of the dorsal spine was never obliterated.

In cadaver 2 a tracing was taken of the dorsal region and a line was drawn connecting the first and twelfth dorsal vertebræ. This line measured in the erect position 25.8 cm. The distance from this line to the point of greatest backward curve was 1.4 cm. in this position. In extreme hyperextension the line was 24.2 cm. long and the upright distance was .8 cm.

Side bending. — Side bending of the dorsal region is a fairly evenly distributed movement of slight extent presenting an even curve which is greatest in the mid-dorsal region. It is freest in the erect position or lying on the face. It occurs less markedly in flexed positions and least in hyperextension. Side bending here is always accompanied by rotation of the bodies of the vertebræ to the convex side of the lateral curve. With both ends of the dorsal region fixed a lateral bend causes the same rotation. With the upper end of the column free the rotation occurring in flexion is very marked in cadavers from which the sternum has been removed.

In cadaver 2 with the twelfth dorsal vertebra fixed in a vise with the thorax intact, the extreme lateral excursion of the first dorsal vertebra from side to side was 10 cm. with the use of moderate force. The vertical height of the dorsal region being 25.5 cm. this excursion represents an arc of approximately 28°.

Rotation is the most marked of dorsal movements. It reaches its greatest extent in the upper dorsal vertebræ and diminishes toward the lower end of the region. In a rotation of moderate force in the upright position it extends to and includes the seventh or eighth dorsal vertebra. Rotation of this region is less in flexion than in the erect position and does not extend so far down. In hyperextension it is much limited and in extreme hyperextension in the cadaver the dorsal rotation movement seemed to be obliterated.

Rotation is accompanied always by side bending, the lateral curve being convex to the side away from which the bodies of the vertebræ turn. In a rotation of the top of the column to the left the lateral curve is to the right and *vice versa*.

The practical points to be borne in mind in the study of the dorsal region are the facts that rotation is freer than side bending, that hyperextension is extremely limited, and that the rotation of the vertebræ in side bending in the dorsal region is always towards the convexity of the lateral curve.

In the dorsal region of cadaver 2, separated from the rest of the spine, the 12th dorsal being fixed in a vise, the 1st dorsal could be made to rotate by the use of extreme force 55° to the right and 50° to the left.[1] This observation was made by means of pins driven into the spinous processes which were sighted on a protractor. This is not an observation of the rotation of the dorsal region on the pelvis, but of the rotation of the dorsal region alone.

The pelvis of cadaver 1 being fixed, and the spine held erect, a forcible rotation of the shoulders to the right was made. This affected only slightly the upper dorsal and cervical regions and is of interest on that account as contrasted with rotations made by twisting the head. The measurements in an observation of the latter manipulation were made by means of plumb lines dropped from the pins at a fixed point on to a protractor. They were as follows:

	Rotation in degrees.
Sacral pin,	0
5th lumbar,	0
4th lumbar,	0
3d lumbar,	4.5 to left
2d lumbar,	8.5
1st lumbar,	11.5
12th dorsal,	17
11th dorsal,	21
10th dorsal,	25
9th dorsal,	27
8th dorsal,	34
7th dorsal,	40
6th dorsal,	43
5th dorsal,	47
4th dorsal,	49.5
3d dorsal,	50
2d dorsal,	50
1st dorsal,	51
7th cervical,	54

LUMBAR REGION.

Flexion in the lumbar region is a movement of much freedom, but the physiological curve in the cadaver was not obliterated in any case observed.

The excursion of the top of the column was noted in cadaver 2, the pelvis being fixed in plaster. The first lumbar moved between the erect position and extreme

[1] Compare measurements of Weber, Volkmann and Hughes. *Loc. cit.*

flexion 8.2 cm. The vertical height of the top of the first lumbar from the first sacral vertebra being approximately 9.5; this represented an excursion of approximately 55°.

In cadaver 2, the length of lumbar spine measured over the top of the spinous processes was 9.7 cm. in the erect position and 12.5 cm. in extreme flexion, showing a lengthening of 2.8 cm. In the model, the length of the lumbar spine measured in like manner was, in the erect standing position, 13.5 cm.; and in extreme flexion, 17.5 cm., an increase in length of 4 cm.

The excursion of pins driven into each lumbar spinous process was measured at a distance of 10 cm. up in the erect position and in extreme flexion.

	Excursion of the pin upward from the erect position.
Sacral pin,	0.4 cm.
5th lumbar,	4 "
4th lumbar,	6.5 "
3d lumbar,	7.8 "
2d lumbar,	9 "
1st lumbar,	9 "

Hyperextension as a general spinal movement is essentially a lumbar motion and in that region is an evenly distributed bend.

In cadaver 2 with the pelvis fixed in plaster and the dorsal region removed, the first lumbar vertebra made in hyperextension an excursion from the erect position of 6 cm. with the use of marked manual force representing an arc of about 40°. In flexion, it has been seen that the excursion was 8.2 cm. from the erect position, the total excursion from front to back being 14.2 with a vertical height of 9.5 cm. This represented a total excursion of the first lumbar vertebra from extreme flexion to extreme extension of about 95°.

The excursion of the individual pins was measured as in flexion. The results were as follows:

	Excursion of each pin from the erect position.
Sacrum,	0.5 cm.
5th lumbar,	2.5 "
4th lumbar,	2.9 "
3d lumbar,	3.2 "
2d lumbar,	4 "
1st lumbar,	4.2 "

In cadaver 2, the length of the lumbar spine erect measured over the spinous processes was 9.5 cm., and in the hyperextended position, 5.0 cm. In the model, measurements taken in like manner gave the length of the lumbar spine erect 13.5 cm., and in the hyperextended position 11.5 cm. These figures show a decrease in length of the lumbar spine measured over the spinous processes of 4.5 cm. in the cadaver, and 2 cm. in the model. In considering these figures, as in all figures given for the model, it must be borne in mind that such measurements on the living body are necessarily relative, from the amount of error involved.

Side bending is a free movement in the lumbar region and forms in the erect position a very evenly distributed curve. It varies markedly in the flexed, erect and hyperextended positions. It is greatest in the erect position and least in extreme flexion.

The rotation accompanying side bending in the lumbar spine is always with the bodies turning to the concavity of the lateral curve; in a bend convex to the left the vertebral bodies turn to the right. This is to be contrasted with the opposite rotation occurring in side bending in the dorsal region.

In cadaver 2 with the dorsal spine removed and the pelvis embedded in plaster a total side excursion of the first lumbar vertebra was 8.1 cm. with a vertical height of 9.5 cm. This represents an excursion of approximately 50° to be contrasted with 28° of total side excursion of the dorsal region.

Rotation in the lumbar region is extremely limited. It is diminished by extreme hyperextension and is least or absent in extreme flexion. Under natural conditions the rotation is greatest in the erect position, but by the addition of traction in that position it is decidedly increased.

The lumbar region possesses marked mobility in flexion, hyperextension and side bending, and but little in rotation. Side bending is more free than rotation in contradistinction to the relation of these two movements in the dorsal region. The rotation which accompanies side bending is also the opposite of that occurring in the dorsal region. In the lumbar region the bodies turn toward the concavity of the lateral curve, *i. e.*, in a bend convex to the left the bodies turn to the right. The lumbar region must be considered in function as including the twelfth dorsal vertebra.

In cadaver 2, with the dorsal spine removed and the pelvis fixed in plaster, the first lumbar vertebra was rotated with extreme manual force to the right and left. The rotation of the first lumbar on the sacrum was estimated by a protractor. Under these conditions, in the erect position an arc described by the pin in first lumbar vertebra was approximately 15° to the right and 17° to the left.

CERTAIN CONCLUSIONS AS TO THE MOVEMENTS OF THE THREE REGIONS OF THE SPINE.

1. In the lumbar region flexion diminishes mobility in the direction of side bending and rotation, and extreme flexion seems to lock the lumbar spine against these movements.

2. In the dorsal region hyperextension diminishes mobility in the direction of side bending and rotation. Extreme hyperextension seems to lock the dorsal spine against these movements.

3. In flexion of the whole spine side bending is accompanied by rotation of the vertebral bodies to the convexity of the lateral curve, the characteristic of the dorsal region.

4. In the erect position and in hyperextension of the whole spine side bending is accompanied by rotation of the vertebral bodies to the concavity of the lateral curve, the characteristic of the lumbar region.

5. The dorsal region rotates more easily than it bends to the side, whereas the lumbar region bends to the side more easily than it rotates.

6. Rotation in the dorsal region is accompanied by a lateral curve, the convexity of which is opposite to the side to which the bodies of the vertebræ rotate.

7. The column of vertebral bodies obeys in flexion, hyperextension, side bending and rotation, and in the combinations of them the same rules which govern the intact spine, a fact of much significance in connection with the rotation theories of v. Meyer and Albert.

III. APPLICATION OF SPINAL MOVEMENTS TO SCOLIOSIS.

That certain of these anatomical facts are of importance in connection with scoliosis is, I think, unquestionable.

Sense of balance of the spine. — The spinal column is an upright weight-bearing column, somewhat flexible in all directions, but in life it must also be regarded as a column endowed with a sense of equilibrium and balance by virtue of its attached muscles which work in response to central nervous impulses. If the pelvis of a cadaver is raised on the right side and the upright spine is left free to move, the top of the column falls to the left and the spine is curved convex to the *right*. (Fig. 26.) This is the position induced by gravity. If, on the other hand, the right side of the pelvis of a living model or child is raised and the upright spine is left free to move, the top of the column remains upright and the spine is curved in the opposite direction, convex to the *left*. This is the position of balance overcoming the position induced by gravity. (Fig. 27.) The sense of equilibrium has worked against the force of gravity and has reversed the position natural to the cadaver. (Fig. 28.) This instinctive sense of balance and equilibrium must be regarded as an attribute of the upright living spine and must be given a place in our study of scoliosis. It is effective in two directions:

1. The erect person always strives to keep the head approximately over the middle of the pelvis, that is, in the sagittal or antero posterior median plane of the body.

2. The erect person always strives to keep the shoulder girdle approximately in the same plane as the pelvis, *i. e.*, in the frontal or lateral plane of the body.

To this adjustment, especially to the element that seeks to keep the shoulder girdle in the same plane as the pelvis, it seems to me too little attention has been paid in our studies of the mechanism of the production of scoliosis. In this instinctive effort to keep the shoulders and head as straight as possible to the front, while disturbances twisting the column below are taking place, is to be found, I think, an important factor in explaining the fixed rotation of scoliosis. The application of this study of spinal mechanics should first be made to the condition known as total scoliosis.

Total scoliosis is the name applied to those single curves involving practically the whole spine in one more or less uniform curve. As a rule, the term is synonymous with *postural scoliosis* and the condition is sometimes spoken of as *lateral curvature without rotation*.

In the Lausanne school children investigation,[9] comprising 2,314 school children, scoliosis with a single curve was found in 91.4% of all curves.[10] In 70% of all curves the scoliosis was one convex to the left. Compound curves, *i. e.*, double curves, were found in 8.6% of all curves in this series.

[9] Scholder: Arch. f. Orth. Chir., i, 3, p. 327.
[10] G. M. Gould: Optic and Ocular Factors in Scol. Am. Med, ix, 142, 562.

If now one passes to the kinds of curves seen in patients coming for treatment one finds the proportion of compound cases much larger. Assuming Scholder's figures to be representative, they show compound curves in 44.5%, total scoliosis in 20.8%, and other single curves in 34.7%. This marked diminution in the proportion of cases of total scoliosis in older children suggests that total scoliosis may change to a compound form in its natural development. This idea, advanced by Schildbach,[11] has been slightly touched on or hinted at by many writers.[12] It has been observed to occur by Hess [13] in 26 out of 86 cases of total scoliosis observed over a period varying from two weeks to eight and a half years, the average being one and one-third years. That total scoliosis may persist as such over a certain period has also been demonstrated by Hess, 60 out of 86 cases not changing to another type while under observation for the time mentioned above.

Experimental curves. — Left total scoliosis of the type seen clinically may be reproduced experimentally in the cadaver by raising the right side of the pelvis and holding or suspending the upper end of the spine approximately over the middle of the pelvis. (Fig. 28.) It may also be produced experimentally in the model or the child, sitting or standing, by raising the right side of the pelvis. (Fig. 27.) The characteristics of the experimental and clinical curves are the same, the spine is curved convex to the left laterally and as a matter of necessity the upper part of the spine is twisted to the right so that the right part of the shoulder girdle is twisted back in its relation to the pelvis and the left side twisted forward. This twist of the shoulder girdle is the inevitable result of a lateral curve to the left in a normal living spine where the upper end of the spine is free.

Torsion in total scoliosis. — We have seen that every lateral curve must be accompanied by twisting, that the chief lateral flexibility is situated in the lumbar and lumbar dorsal region and that lateral bending in this region is accompanied by twisting of the bodies of the vertebræ toward the concavity of the lateral curve. In a left convex curve, therefore, the upper spine and thorax *must* twist backward on the right side, and the phenomenon known as *concave-sided torsion, reverse rotation, retrotorsion*, etc.,[14] is seen as a backward prominence of the back on the concave side of the lateral curve, in standing and often in bending forward.

If one looks down on a child with a left total scoliosis, standing at ease, one sees that the shoulder girdle is held twisted backward on the right in its relation to the pelvis. (Fig. 29.) These torsion appearances are more marked in children with a marked lumbar (lordosis) curve than in those with round backs as pointed out by Schulthess.[15] This is because the more the lumbar

[11] Schildbach: Die Skoliose, Leipsig, 1872.
[12] Hoffa: Orth. Chir., 5th ed., 1905.
[13] Hess: Zeit. f. Orth. Chir., vi, 3, 4, 556.
[14] Schulthess: Zeit. f. Chir., x, p. 489.
[15] Zeit. f. Orth. Chir., vi, 399, vi, 556, 1892, 1. Revue d'orthopedie, vol. vi.



FIG. 1. — Composite photograph (two exposures) on the same plate) showing the model standing erect and bending to the right without fixation of the pelvis. The movement is a general one.

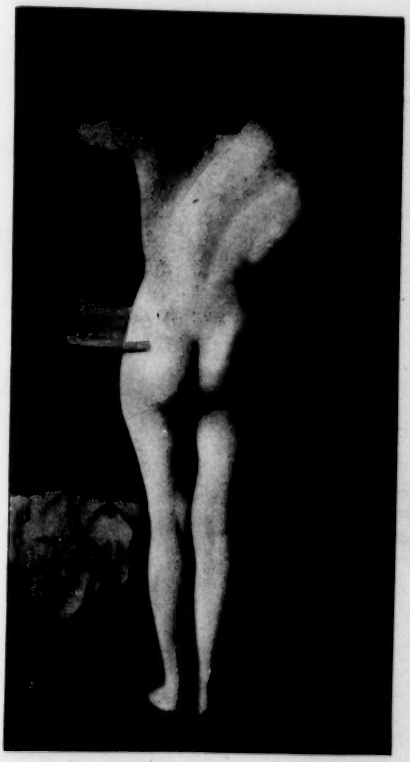


FIG. 2. — Composite photograph of the model standing erect and bending to the right with the pelvis fixed. The movement is limited to the spine.

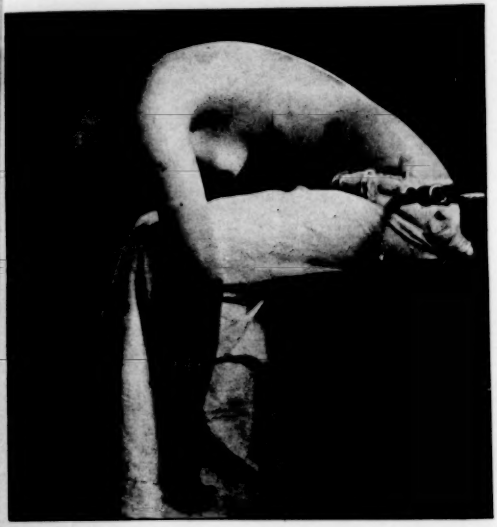


FIG. 3. — Flexion of the spine in the model.

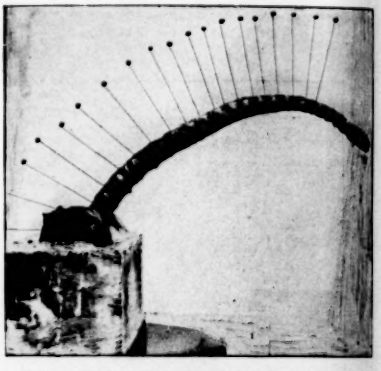


FIG. 5. — Flexion of the spine in the column of vertebral bodies alone. The spine is that of cadaver I.

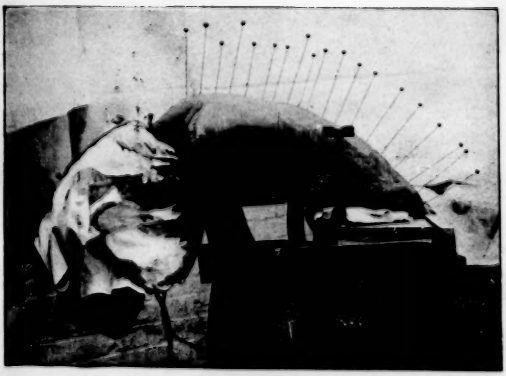


FIG. 4. — Flexion of the spine in cadaver I.

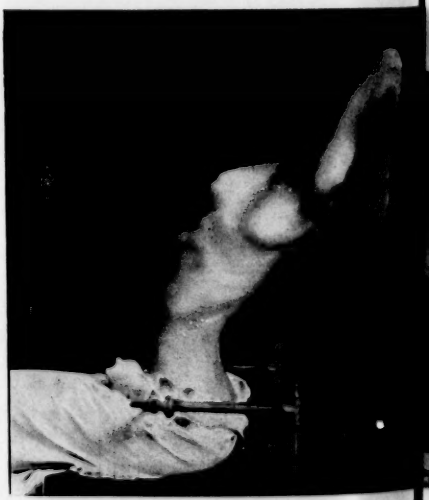


FIG. 6. — Hyperextension in the model. The head is supported to secure steadiness. (See Fig. 7.)

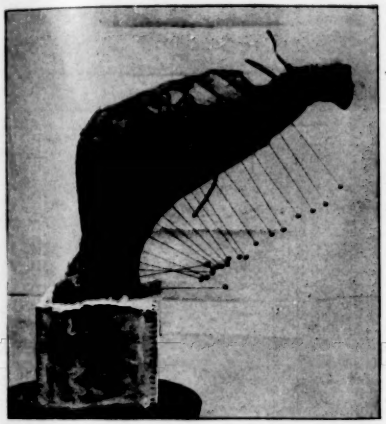


FIG. 7. — Hyperextension in the cadaver.

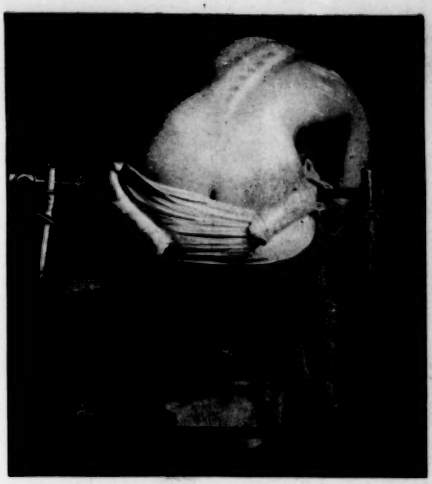
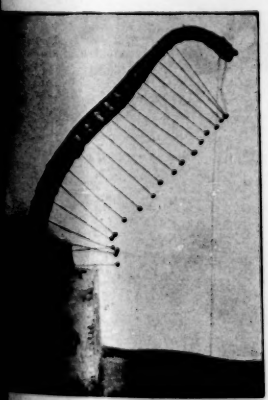


FIG. 9. — Side bending to the right in the flexed position of the spine in the model. A lateral curve convex to the left is formed and the vertebral bodies have turned to the left as shown by the elevation of the left side of the back. (See Figs. 10 and 11.)



...8. — Hyperextension in the column of ...ral bodies alone.



FIG. 10. — Side bending to the right in the flexed position of the spine in the cadaver. A curve convex to the left is formed and the vertebral bodies turn to the left.



FIG. 11. — Side bending to the right in forward flexion in the column of vertebral bodies.

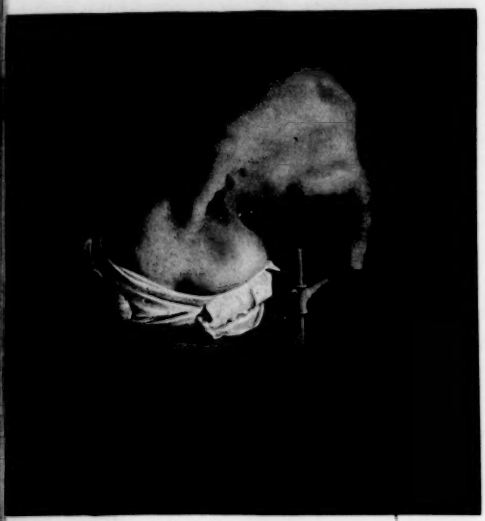


FIG. 12. — Side bending in the upright position of the model. The movement is chiefly located at the dorso-lumbar junction.



FIG. 14. — Side bending to the right in the hyperextended position of the spine in the cadaver. The movement occurs chiefly at and below the dorso-lumbar junction, and the bodies of the vertebræ turn to the right as shown by the pins. The lateral curve is convex to the left.

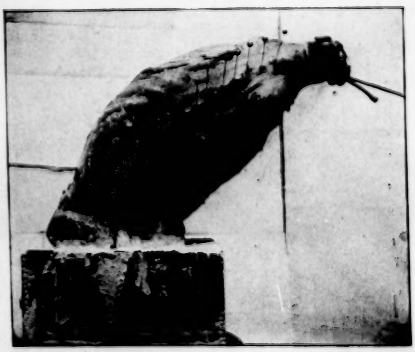


FIG. 13. — Side bending in the upright position of the cadaver, showing the same characteristics as Fig. 12.

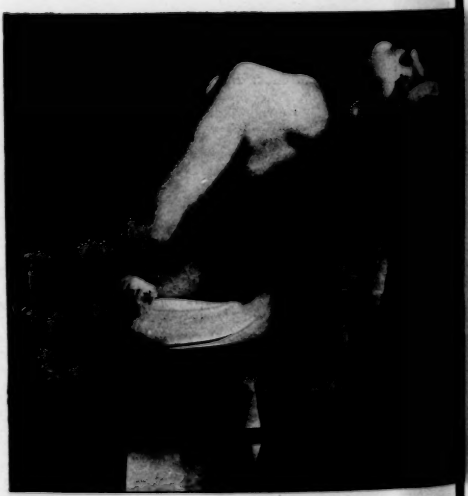


FIG. 15. — Side bending to the right in the hyperextended position of spine in the model. The head is supported to secure steadiness. (See Fig.



FIG. 16. — Side bending to the right in hyperextension in the column of vertebral bodies. The same characteristics are shown as in the previous figure.



FIG. 18. — Rotation of the column of vertebral bodies, face to the left, by moderate manual force. The picture is the reverse of that in the model, but shows the same characteristics.

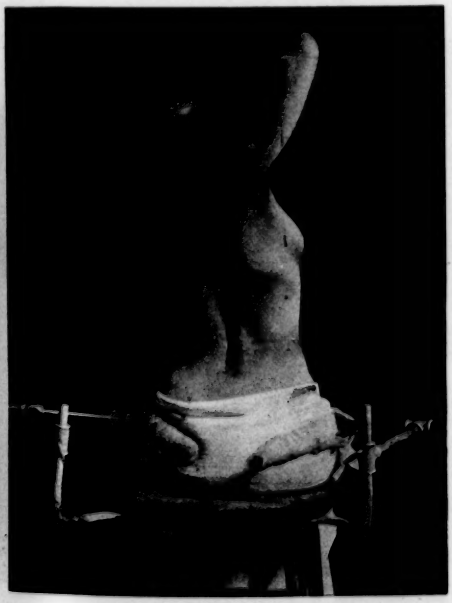


FIG. 17. — Rotation of the model, face to the right, causing a dorsal lateral curve convex to the left and a displacement of the trunk to the left.



FIG. 19. — Rotation in the cadaver, face to the left, by moderate manual force. The rotation does not affect the lumbar region; no traction is used. (See Fig. 20.)



FIG. 20. — Rotation in the cadaver, face to the left, by moderate manual force, while traction of thirty-eight pounds is made on the head. With the use of approximately the same force as in Fig. 19 the rotation involved the lumbar vertebræ.



FIG. 21. — Rotation of the spine of the cadaver, face to the right in the flexed position of the spine.
The movement is seen to be located in the upper part of the column by the deviation of the pins.

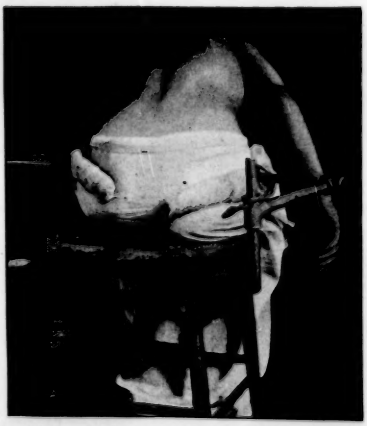


FIG. 22. — Rotation, face to the right, in the model in the flexed position of the spine. The rotation is located chiefly in the upper dorsal region. (See Fig. 21.)



FIG. 23. — Rotation of the spine of the cadaver, face to the right, in the hyperextended position. The movement is seen to occur in the lower part of the spine by the rotation of the pins.



FIG. 24. — Extreme passive flexion of the dorsal spine. The spine has slipped somewhat in the vise as shown by the inclination of the lowest pin compared with the same pin in Fig. 25; the apparent amount of flexion is therefore exaggerated.



FIG. 26. — The right side of the pelvis of the cadaver is raised and the upper part of the spine falls to the left, making a lateral curve convex to the right.



FIG. 25. — Extreme hyperextension by the use of passive force in the dorsal region.

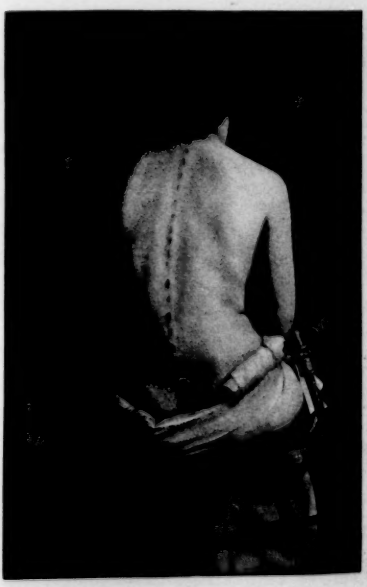


FIG. 27. — The right side of the pelvis of the model is raised and the upper part of the spine is carried to the right, making a lateral curve convex to the left.



FIG. 28. — The upper end of the spine of the cadaver is held by the hand over the middle of the pelvis, while the right side of the pelvis is raised, and a position like that of the living model is produced with a lateral curve convex to the left.

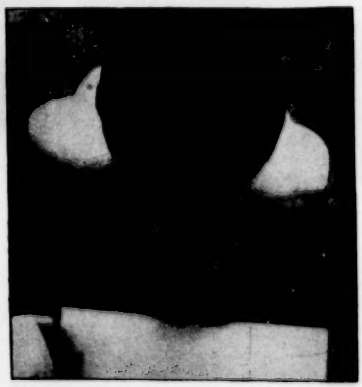


FIG. 29. — Boy with left total scoliosis photographed from overhead, showing the carrying back of the shoulder girdle on the right.
The front edge of the board on the floor marks the lateral plane of the pelvis.



FIG. 30. — Experimental double curve (right dorsal, left lumbar) produced in the cadaver by elevating the right side of the pelvis and twisting the upper end of the spine, face to the left.

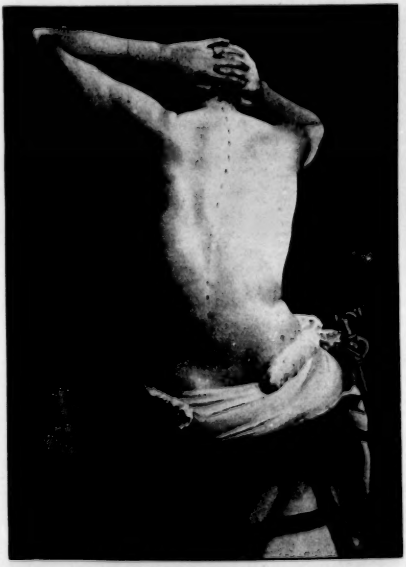


FIG. 31. — Experimental double curve (right dorsal, left lumbar) produced in the model by elevating the right side of the pelvis and having the model actively twist the upper spine, face to the left.

region is curved forward, the more markedly will the torsion phenomena peculiar to that region appear.

My own observations as to this twist of the shoulder girdle are confirmed by the results of Hess who found twisting back of the left shoulder in only one out of twenty-eight cases of left total scoliosis examined. From the fact that total scoliosis can be produced experimentally, it may be regarded as a malposition which can be produced by the normal mechanism of the spine rather than as a pathological malposition of the spine and that its clinical characteristics are the inevitable result of a force causing the spine to be curved convex to the left.

A left total scoliosis may be cured, it may persist as such, or it may change to another type of curve.

It may be of use to apply our knowledge of spinal mechanics to the prediction of what changes are likely to occur to modify total scoliosis and cause it to assume a compound type. If total scoliosis tends to increase, it must do so by an increase of the existing side bend and of the existing twist since both are correlated, not necessarily of both in exact proportion, but to some extent both factors must share in it. The shoulder girdle will, therefore, be more twisted as the lateral curve increases. One, however, does not see the condition clinically of extreme left total curve and extreme right backward rotation of the shoulder girdle except, possibly, in cicatricial or paralytic cases. An adjustment apparently takes place when the tendency of the total curve to increase passes beyond a certain point. For the explanation of this one naturally looks to the instinctive tendency to equilibrium and balance spoken of as an intrinsic property of the upright living spine. There must be going on at all times this effort to square the shoulder girdle with the pelvis and to keep the head and upper spine as nearly as possible in the median line of the body. This adjustment will naturally occur where the spine offers the least resistance to it, and as individual vertebral columns vary, the compensatory adjustment will take various forms.

Double curves. — Assume that a child stands and sits with a left total curve. He will, after a certain point in the deformity is reached, be continually striving to twist the upper part of his spine and his shoulder girdle forward on the right and to bend the upper part of his spine convex to the right to restore his balance. We have seen that the dorsal spine twists more easily than it bends to the side. He is, therefore, more likely to twist his dorsal spine than to bend it to the side. He will, therefore, twist the upper dorsal spine to the left which twist, as we have seen, necessarily carries with it a dorsal lateral curve convex to the right.

If this theory of instinctive adjustment can be accepted, the tendency to correct the twist of the shoulder and upper end of the spine is sufficient to explain the transition of a left total curve to a right dorsal left lumbar curve. Such a double curve can be reproduced experimentally in the cadaver (Fig. 30), the model (Fig. 31) and the child by inducing a left total curve and adding a twist, active or passive, of the shoulder girdle forward on the right. A right dorsal left lumbar lateral curve then exists.

Support is given to this idea by the fact that in structural right dorsal left lumbar curves with bony rotation one is likely to find in looking down upon the standing patient that the left side of the shoulder girdle is seen to be carried backward in its relation to the pelvis and the right side forward. This, of course, is the reversed position to that seen in the left total curve. The same relation of the shoulder girdle is to be noticed in single curves to the left which are accompanied by bony rotation, the position again being the reverse of that seen in left total scoliosis.

A significant fact is contained in a statement of Hess relative to this study of total scoliosis: *Wir dürfen aus diesen Zusammenstellungen den Schluss ziehen, dass die Formen mit concav seitiger Torsion und gleichmässigen Torsionsverhältnissen nicht bloss als Totalskoliosen persisten sondern auch ihre Torsion moglichst beibehalten.*

This suggests that the disappearance of concave-sided torsion in any part of the spine indicates that the compensatory change has already begun and that the so-called total scoliosis has begun on its transition to a compound curve.

This part of the subject is of so great importance that I do not venture to enter on it here without extensive clinical observation. This question offers a promising field for future investigation in the application of spinal mechanics to clinical conditions.

We should, therefore, regard with suspicion any case of apparent total scoliosis that shows any departure from the clinical type described. Such cases must be regarded as probably having entered on the stage of transition.

That left total curves most frequently change to right dorsal left lumbar compound curves than to any other form is shown by the figures of Hess and by a statement of Schulthess.[18] But we cannot expect the same final curves always to result from the same initial curve. Various forms of curves may occur from the same simple curve. For example, the dorsal region may not react as described and the dorsal and lumbar region may yield, as a whole, to the left, later showing bony rotation on the left side. The spine has yielded backward and to the left as a whole and other types of compound curves may obviously result from the same initial curve.

Up to the point of the occurrence of bony convex-sided rotation the attitudes are, I think, to be regarded as rather malpositions within the range of the normal mechanism than as pathological in type.

With the occurrence of persistent bony rotation on the convex side of the lateral curve, it must be assumed that pathological changes have begun and that the normal mechanism does not account for this phenomenon. The normal

[18] Lüning und Schulthess: Orth. Chir., 1901, p. 248.

mechanism is capable of putting the spine into a distorted position with curves in opposite directions, *but not of causing bony rotation on the convex side of the lateral curve.*

The occurrence of such bony rotation must be regarded as a superadded pathological change in structure due to abnormal plasticity of bone in the affected individual.

Up to the point of bony rotation one must remember that the phenomena can be experimentally reproduced in any normal cadaver, model or child, but that bony rotation cannot be experimentally reproduced and cannot be explained in terms of spinal movements.

I would, therefore, ask you to regard concave-sided rotation as in a measure physiological and convex-sided rotation as pathological, not that the two phenomena are sharply separated, for, of course, they run into each other and overlap, but for purposes of greater clearness the types of the two should, I think, be kept separate.

Bony rotation. — The question of the cause of bony rotation lies outside of my present line of inquiry, and has been amply treated by German writers.[17] It seems to me to be explained by the fact that the vertebræ of some children are plastic and ready to be distorted by increased pressure on one side and diminished pressure on the other, and that Wullstein's experiments on the dogs have proved this, if we need proof. In a column curved to one side or to both sides in different portions the pressure is greatest on the side of the vertebra next to the concavity of the curve and least on the side of the convexity, because the line of weight falls to the median side of the concavity. If the vertebræ are plastic, they will yield in the line of least resistance; that is, toward the side of the convexity of the lateral curve.

A plastic weight bearing column curved in two directions will not yield straight to the side, but will also twist. The vertebral column in all parts is curved in the anteroposterior plane by the physiological curves. The rotation will naturally be away from the line of gravity, the median line of the column, because to twist toward it would be to encounter the greatest instead of the least resistance. It seems to me, therefore, wholly in accord with what we know of general mechanics that in a plastic weight-bearing column curved in two planes bony rotation must occur on the convex side of each lateral curve.

Classification. — From this point of view, there are then two distinct divisions of lateral curvature, — one, the total curves accompanied by prominence of the back on the *concave* side of the lateral curve (rotation on the right, in curves convex to the left) which are to be regarded as postural and not accompanied by extensive pathological changes.

The other, the compound or more rarely, single curves accompanied by prominence of the back on the *convex* side of the lateral curve (rotation on the left, in curves convex to the left and *vice versa*). These represent the cases accompanied by pathological changes in the vertebræ, Finally transition cases are to be recognized.

Summary. — No summary is possible of a paper which in its entirety is only a summing up of certain facts in a field of study large enough to fill a volume. The points that I have tried to establish from anatomical and clinical data are that total postural scoliosis is to be regarded as as within physiological limits and that it can be accounted for by the normal mechanism of the spine; that the same normal mechanism will account for the production of compound curves from simple ones, but that it will not account for the occurrence of bony rotation on the convex side of the lateral curve which must be regarded as a superadded pathological change. Certain of the anatomical facts considered should be of direct use in making more exact the gymnastic treatment of slight scoliosis, but that they can be carried over into the gymnastic treatment of structural scoliosis without very careful consideration in each case does not seem to me likely. In the latter case we are no longer dealing with a spine distorted by the normal mechanism, but by a malposition to which is added a distorting pathologic process. That a knowledge of spinal mechanics will make clearer the treatment of structural scoliosis I have no question, but the application of this knowledge will require further study and careful investigation.

[17] Riedinger: Morph. und Mech. d. Skol., Wiesbaden, 1901. Schanz: Die Relast. Def. d. Wirbelsäule, Stuttgart, 1904. Hoffa: Orth. Chir., 8th ed., p. 328.

FIRST OF A SERIES OF ARTICLES ON THE APPENDIX VERMIFORMIS.

BY WM. A. BROOKS, JR., A.M., M.D., BOSTON,
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Position. — In tracing the development of the human embryo, the appendix vermiformis is first seen immediately following the differentiation of the large and small intestine. It is then found high up on the right side of the abdomen, close to the liver.

As the ascending colon develops and obtains its growth downwards, the cecum with the appendix occupies a lower and lower position on the right side of the abdomen, until, with the full development, the cecum and its appendix come to rest in the right iliac fossa, and it is here that the appendix is found in a great majority of cases.

Frequently only the base of the appendix rests in the right iliac fossa, while the remainder lies towards the median line or hangs over into the true pelvis.

The longitudinal bands on the ascending colon and cecum invariably lead downwards to the base of the appendix.

With the fastening back of the ascending colon owing to the gluing together of the posterior visceral layer covering the ascending colon and its mesentery and the parietal peritoneum lining the posterior wall of the abdominal cavity, the cecum and its appendix are practically held in one position, and the excursions of the appendix

are limited by the degree of freedom of the cecum and the length of its own mesentery.

It is in these normal cases that the McBurney point is of value, and in these cases alone.

Abnormal positions. — If, for any reason, the development of the ascending colon is arrested it will be easily understood why the appendix may be found at any point between the right iliac fossa and the liver.

Should the ascending colon fail to become attached to the posterior wall, the appendix may be found almost anywhere within the abdominal cavity.

Example. — There is a subject of a sixteen-year-old girl at the Harvard Medical School which presents just this condition of affairs. The ascending colon is completely unattached to the posterior abdominal wall except by the root of its mesentery. The appendix may be placed at almost any point in the abdominal cavity, within the radius of its own mesentery and the mesentery of the ascending colon.

Causes of acute appendicitis. — In a general way it may be said that anything which forcibly obstructs the lumen of the appendix or anything which seriously interferes with the circulation of the appendix, will bring about an attack. In a great majority of cases fecal concretions are found to have been the cause of an attack, and it can be readily understood how, as a result of peristaltic action, fecal matter is forced into the appendix and becoming more and more firmly wedged towards the tip, affects the circulation in the wall and leads to obstruction, ulceration and perforation or gangrene. A kink or twist in the organ may produce the same result.

For a time it was considered that the presence of a foreign body was the most common cause. Examination of hundreds of cases has shown this is not the case.

It is a question whether some cases of acute appendicitis seen in elderly people are not indirectly due to arterial changes, a slight accumulation of fecal matter producing a result which would not be expected if the organ was well nourished.

A great deal has been written about catarrhal inflammation of the cecum and the ascending colon extending into the appendix. These cases are more apt to be chronic and do not, as a rule, present the serious acute attack.

Infrequently there are seen cases which are the result of a sudden perforation of a chronic ulcer, the ulcer being part of the process that is going on within the cecum and the ascending colon.

To sum it all up, the severe acute attack of appendicitis is generally due to an occlusion of the lumen or of a shutting off of the blood supply from some portion or greater part of the appendix itself.

Note. — It has been observed that appendices whose mesenteries do not extend well to the tip are more liable to become gangrenous when their lumens are occluded. Those appendices with complete mesenteries are more subject to the suppurative type of the disease.

Symptoms. — The group of symptoms which any one patient presents when suffering from an acute attack of appendicitis is not sufficiently reliable to make a diagnosis from for all cases.

The sudden onset, pain, vomiting, tenderness, rigidity of the abdominal muscles, high pulse and temperature may or may not be noted in any one case.

As a rule, for some unknown reason, the attack begins at night. The patient wakes up suffering from abdominal pain. This pain may be general in character. It may or may not be accompanied by vomiting. There may or may not be an elevation of pulse and temperature. If the inflamed appendix is so situated that pressure can be put upon it, *tenderness can always be found.*

When, however, the appendix lies over in the true pelvis, so situated that pressure either manually or bi-manually cannot be put upon it, even this symptom of tenderness cannot be elicited.

If such a case is allowed to progress until most of the cardinal symptoms present themselves, the diagnosis is no longer in doubt. But while waiting for these symptoms to become established in order to make a definite diagnosis, the danger to the patient is increased many-fold.

Some authorities state that in every case of appendicitis they expect to find four symptoms: localized pain, tenderness, elevation of pulse and temperature, nausea and vomiting. Experience has shown that the symptom of *tenderness* is by far the most reliable and the most constant. Other symptoms vary so markedly and are so many times found wanting that they are not reliable. If not found they should not be waited for.

The previous history of a patient may be of value. There may be a history of previous attacks of abdominal disturbances or of well-defined attacks of appendicitis. Chronic constipation has a distinct bearing. Attacks of abdominal pain and diarrhea are to be considered. In fully 50% of the cases the previous history is negative.

When to operate. — There is no question about the advisability of operating upon every case where the appendix is suspected and where within a few hours after the initial symptom or symptoms, a rapid improvement has not taken place.

Exception. — Cases in which complication of other diseases makes the operative risk too great.

One of Boston's best surgeons once remarked that the time to operate upon a case of appendicitis was before the diagnosis was made. This sounds absurd, but it appeals to many surgeons who have been called too late many times and have been beaten in the struggle to save the life of the patient.

Waiting until every symptom is present and the diagnosis is beyond dispute means taking away from the patient many chances of recovery.

Probably there is no affection which presents so many and so varied conditions within a comparatively short space of time. Other diseases run their course and we know something about

what to expect as the hours and days go by, but *no one* can tell the condition of the appendix by judging from the symptoms which the case presents.

Perforation may take place with the initial pain and general peritonitis may set in almost immediately. The appendix may become gangrenous within a few hours. The only *positive* way of knowing what the condition is, is by opening the abdomen and inspecting the appendix.

Without question many cases of appendicitis have been cured by medical treatment and many others will be. It is also true that many cases have been lost by being treated medically or by waiting for the diagnosis to be thoroughly established.

It is a well-known fact that the patient after having one attack of appendicitis is liable to a recurrence of the trouble at any time, and the subsequent attack may be fatal. These facts force one to the conclusion that it is better to operate and remove the seat of the trouble, than to congratulate oneself on a cure which leaves the patient forever liable to another attack.

The operation for acute appendicitis. — Preparation of the patient: While the preparation of the patient must be quickly performed it must be done thoroughly. If necessary the patient is catheterized. No attempt is made to evacuate the bowels.

The lower part of the body must be shaved. After a thorough scrubbing with soap and water, care being taken not to excoriate the skin, the soap is removed by allowing a solution of corrosive sublimate, 1–3000, to drip from pieces of sterile gauze. The part is then wiped by ether followed by alcohol. As soon as the patient is under the influence of an anesthetic, the abdomen is again gently scrubbed and sterile towels placed about.

The incision. — Formerly it was considered that the incision should be an oblique one, about half way between the anterior superior spine and the umbilicus, running parallel with Poupart's ligament. This incision is practically obsolete.

The majority of surgeons now prefer either to go through the rectus muscle on the right and open through into the abdominal cavity; or, having made an incision down to the rectus, to retract that muscle towards the median line and then go through into the abdominal cavity.

As in every case of laparotomy great care must be taken not to injure the intestines when the peritoneum is opened.

The gridiron incision should never be used in operating for an attack of acute appendicitis. As one never can tell what the condition of the appendix is, there is danger in an incision which cannot be enlarged without serious damage to the parts.

Technique. — When the abdominal cavity is opened, many men are in the habit of introducing the fingers in order to determine the location and condition of the appendix. Such a procedure has its dangers. Slight adhesions may be broken up and septic material scattered about in the abdominal cavity.

By far the best method is the careful introduction of walling-off gauze, above to the inner side and below the region of the appendix.

Having placed these safe-guards, by the introduction of a retractor, the outer edge of the wound can be drawn outwards and the cecum brought into view. The cecum can then be drawn up into the wound, and if it is comparatively free, the affected appendix can be brought completely outside of the abdominal cavity. Gauze can then be packed around the cecum; the mesentery of the appendix tied and cut away; the appendix itself securely tied at its base after its contents have been stripped either back into the cecum or towards the tip of the appendix by the gentle pressure of a hemostat. A hemostat is firmly closed on the appendix, so placed as to leave sufficient space between the ligature around the base of the appendix and the hemostat for the appendix to be severed with the actual cautery.

The custom of cutting through the appendix with a knife or scissors and the application of 95% solution of carbolic acid to the stump is not so satisfactory a procedure as is the use of the actual cautery, for the reason that it is difficult to absolutely control the caustic effects of the acid.

After the appendix has been removed one of two methods may be employed. Either the cecum with the cauterized stump of the appendix may be dropped back into the abdominal cavity, or by means of a pursestring suture taken in the head of the cecum, the stump may be covered in, the stump of the appendix being pushed towards the cecum as the suture is drawn tight. Any spaces between the peritoneal surfaces are then closed by fine intestinal sutures.

While some consider that the use of the pursestring suture has its danger from the fact that the needle may be allowed to penetrate into the intestine, if the suture is applied carefully this danger does not exist. The patient suffers much less pain and discomfort when the stump is covered in, and there is much less liability of the development of a fecal fistula, either as a result of subsequent sloughing of the stump of the appendix, or by the slipping of the ligature.

In a certain number of cases in which, subsequent to the operation, the large intestine has become distended with gas, the stump of the appendix has drawn out from the ligature. This fact would suggest the advisability of transfixing the stump if it is not going to be covered in. The cecum and the stump of the appendix having been returned to the abdominal cavity, the gauze packing is removed. A small wick is left extending down to the base of the appendix. The remainder of the wound is closed by interrupted through and through sutures or by continuous sutures of the different layers.

The day has passed when the surgeon, relying on his judgment of the conditions which he can see in the neighborhood of an acutely inflamed appendix, completely closes the abdominal cavity. The leaving of a small wick is a practical guarantee

of the safety of the patient, and if absorbable ligatures have been used there is no danger of a persistant sinus.

After care. — The after care of a patient who has been operated upon for an uncomplicated attack of acute appendicitis is a simple matter. As soon as the stomach has quieted down from the effects of the anesthetic, sips of hot or cold water may be given. The patient should be kept quiet and made to lie on his back. After the first twenty-four hours an attempt may be made to move the bowels by enemata and at the end of forty-eight hours small doses of calomel, $\frac{1}{10}$ gr. each, can be given every hour, for eight or ten doses, to be followed by a saline the next morning.

At the end of twenty-four hours or as soon as the bowels have moved, the patient can be given liquids in any form. If these are well borne, they can be followed by soft solids, and then by solids, so that at the end of three days the patient is practically on a regular diet.

The gauze wick, if the temperature and pulse are favorable, can be started at the end of twenty-four hours, shortened the following day or removed entirely. After the removal of the wick, the edges of the wound can be drawn together by a strip of adhesive plaster. At the end of a week the patient can be allowed to sit up in bed and at the end of ten days it is safe to have the patient sit up out of bed. In from twelve to fourteen days the patient may be allowed to walk about.

Clinical Department.

THE EARLY DIAGNOSIS OF MALIGNANT DISEASE OF THE STOMACH AND INTESTINES.*

BY WILLIAM H. ROBEY, JR., M.D.,
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THE study of cases of abdominal disease is of steadily increasing interest. I use the broad term of abdominal disease because when the case is first seen we are often at a loss to tell the specific organ involved. These cases are of great interest to the surgeon but they are of greater interest to the stomach specialist and physician because with him rests the decision of what shall be done in the individual case. The surgeon complains because the patient is brought to him by the physician too late to make his operation anything but a last resort. The conscientious physician is striving not to have it so. He retains a case merely because he honestly does not know at what stage in the disease to offer operation to his patient. The reason for this is because our present methods of stomach examination are so uncertain in pointing to definite conditions and because many of the malignant cases are so well advanced before they offer themselves for treatment.

Dr. J. C. Munro says that the majority of patients seeking aid of the medical practitioner and the stomach specialist are medical and not surgical from first to last. These are the dyspeptics from alcohol, dietary errors, worry, etc., and they can all be cured far better in any way than by surgery.

We are accepting surgery for relapsing ulcer, hemorrhage and, of course, for perforating ulcer. In relapsing ulcer we have more time for diagnosis. A simple ulcer will yield to the ordinary medicinal measures and may not recur, but where there are repeated relapses with distress, pain and hemorrhages we believe now that surgical interference offers the best if not the only outcome for the case. If the case is treated medically the patient should be told it will require at least three months of strict attention. After recovery there should be comparatively good health, and if not, that is, if there is indigestion, epigastric pain and vomiting, it is clearly the duty of the physician to call the surgeon in consultation with a view to warding off the danger of hemorrhage or perforation or, if not these serious accidents, continued ill health with the possible malignant growth on the site of the old ulcer. As some of our cases of malignant disease show very few striking symptoms before the patient is past all help, so in ulcer the first intimation of its presence is hemorrhage or perforation. Osler says that a fatal result is not very common from hemorrhage, but the recent review of Lund, Joslin and Murphy shows a high mortality from this accident. They furthermore show that 56% of the ulcer cases medically treated were either dead or had stomach trouble after their discharge from the hospital.

In private practice the good results from medical treatment are more readily maintained.

It is necessary for the physician to keep in touch with his stomach cases after they have been discharged as relieved or cured in order that he may be informed of the recurrence of indigestion or other symptoms pointing to the return of the ulcer. Or if this is impossible because of change of residence or for other reasons the full importance of keeping in touch with a medical man should be explained to the patient. This paper deals particularly with the question of malignant disease of the abdominal viscera, but the fact that carcinoma may grow upon the base of a chronic gastric ulcer makes the consideration of treatment of ulcer important in this connection.

Welch's table of the cardinal symptoms of gastric carcinoma and gastric ulcer is given for reference.

WELCH'S TABLE.

GASTRIC CANCER.

1. Tumor present in three fourths of cases.
2. Rare under forty years.
3. Average duration about one year; rarely over two years.
4. Gastric hemorrhage frequent but rarely profuse; most common in the cachectic state.
5. Vomiting often has the peculiarities of that of dilatation of the stomach.
6. Free HCl usually absent; lactic acid present.
7. Cancer fragments in washings or in vomitus.

* Read before Norfolk District Medical Society, Feb. 28, 1905.

8. Secondary tumors in liver peritoneum and lymphatic glands.
9. Rapidly advancing loss of strength and flesh with developing cachexia.
10. Epigastric pain more continuous, less dependent upon taking food; less relieved by vomiting and less localized than in ulcer.
11. Cause unknown.
12. No improvement or only temporary in the course of the disease.

GASTRIC ULCER.

1. Tumor rare but may be present.
2. May occur at any age; over one half the cases under forty years.
3. Duration indefinite; may be for several years.
4. Gastric hemorrhage less frequent than in cancer, but oftener profuse; not uncommon when the general health has got a little impaired.
5. Vomiting rarely referable to dilatation of the stomach and then only in a late stage of the disease.
6. Free HCl acid usually present in excess.
7. Absent.
8. Absent.
9. Cachectic appearance usually less marked and of later occurrence than in cancer.
10. Pain is often paroxysmal; more influenced by taking food, oftener relieved by vomiting and more sharply localized than in cancer.
11. Cause unknown.
12. Sometimes a history of several attacks; usually a marked improvement by regulation of diet.

The following cases with one exception, I have seen during the last eight months in the outpatient department of the Boston City Hospital or in private practice:

CASE 1. P. J. S., age fifty; occupation, house painter; born in Ireland. Family history unimportant save that one brother died of tuberculosis.

Alcohol very moderate. Tobacco from 30 to 40 cents per week. Up to six months ago was perfectly well when he began to vomit his breakfast every few days. There was progressive weakness and five months ago felt discomfort in the left back below the scapula which developed into so severe a pain that four months ago he stopped work and went to bed for two or three weeks. At the time of entrance the pain was severe on exertion. There was marked pallor, poor appetite and a loss of 40 pounds in weight. The vomitus consisted of food and was not "coffee grounds" in character, not foul, nor suggestive of dilated stomach. P. E. Somewhat emaciated, very pale, cachectic; the whole skin a lemon yellow tinge; a question of the sclera being slightly yellow. Hg 60%. Pupils, normal. Tongue, dirty white coat. Chest, barrel-shaped. Lungs, negative. Heart, area not enlarged; sounds weak, no murmurs. Abdomen, lax, no special tenderness. In epigastrium a distinct resistant mass. Liver, two inches below costal margin. Spleen, normal. No glands. No edema. Urine, negative.

Test meal report: No blood, no free HCl. No lactic acid. No apparent enlargement of stomach.

SUMMARY: Tumor, cachectic appearance; rapid loss of weight; severe pain; progressive weakness; emaciation; absent HCl; hepatic enlargement.

Patient died in August, 1904; constant vomiting; loss of weight; never any pain.

Diagnosis: Gastric carcinoma.

CASE II. J. K., age forty-three; married; laborer; born in Ireland. Mother died of cancer of breast. Past history unimportant. Venereal, negative. Alcohol, five to six beers a week, two whiskeys daily, one before breakfast. For some time pain and discomfort in epigastrium two hours after meals. Morning vomiting, and on morning of entrance found a half tablespoonful of blood in the vomitus. Best weight, 162. Weight to-day, 150. Back of pharynx, red. Pupils, normal. Chest, negative. Abdomen, liver comes four fingers' breadths below costal margin, not tender, begins at sixth rib above, no dilated veins, no escites, no edema.

No tumor; appearance not cachectic; no special loss of weight; pain in epigastrium but not constant; no weakness; enlarged liver.

Alcoholic cirrhosis of liver.

Patient improved and in good health one year later.

CASE III. E. D., forty-five; married; teamster; born in Boston. Family history unknown. Past history negative. Venereal, negative. No alcohol and a very little tobacco. Was perfectly well until three months ago but since then has complained of constant pain in the stomach and for the last few days has felt it about the heart. Appetite, poor. Bowels, constipated. Sleeps about four hours at night and a few weeks ago vomited "black like ink." P. E. Best weight, 135. Weight to-day, 127. Well developed and somewhat emaciated. Color, not good. Very cachectic. Eyes, normal. Mouth and throat, negative. Heart, not enlarged, no murmurs. Lungs, some dullness at left apex with a few questionable râles. Abdomen, stomach dilated to right one inch above umbilicus. Marked tenderness in middle line of epigastrium. Liver and spleen, negative. Stomach contents, a little mucus and undigested boiled cabbage. No free HCl, no lactic acid. Dr. Crandon saw this patient and recommended bed, observation and possibly exploration, but patient refused further treatment and left against advice.

SUMMARY: Epigastric tenderness; cachectic appearance; looks very sick; short duration. Gastric hemorrhage; black vomitus; free HCl absent. Constant epigastric pain; progressive weakness.

This patient went to the Island as an incurable, but improved there and although lost track of, was reported in good health when last seen. He probably had ulcer instead of cancer.

CASE IV. P. H. D., fifty-one; single; painter; born Boston. One sister died of phthisis. Past history, jaundice. Alcohol, five or six beers daily, two whiskeys before breakfast. For one week has been jaundiced. Appetite, poor. Bowels, regular. Vomited last night. Gets up from four to six times at night for urination. Cough with thick white sputum in morning. Best weight, 150. Weight to-day, 126. W. D. Emaciated. Bright lemon color all over body. Sclera, bright yellow. Cornea of left eye, opaque. Tongue protruded in median line, a slight white coat. Chest, barrel shaped, expiration of lungs prolonged. Heart dullness practically absent, sounds distant, no murmurs. Abdomen, liver from fifth space to a little below umbilicus, edge easily palpable. Spleen not felt. Pulses, equal and good quality. Patient was in the house for ten days. Discharged relieved, but still jaundiced. Sept. 1. Heart percussion shows normal size, sounds faint and regular. Lungs, emphysematous, otherwise negative. Liver, fifth interspace almost to umbilicus. Sept. 2. Test meal: Rejected 15 cc., well digested. Total HCl, .07%. Total acidity, 14%. Lactic acid absent. Urine, slight trace of albumen; numerous hyaline, granular and epithelial casts; numerous free renal cells and occasional red blood corpuscles.

No tumor, no resistance, no gastric hemorrhage, very little vomiting, free HCl present. Large liver with jaundice. No epigastric pain.

This patient improved with hospital treatment and has continued in good health for a year.

Diagnosis: Alcoholic cirrhosis.

Case V. F. M., forty-one; seaman; born in Newfoundland. Family and past history negative.

Twenty glasses of beer a day and then a week without any. Some whiskey. Tobacco, 25 cents' worth a week. Two months ago began vomiting after eating. A similar attack lasting one week four months ago. The last two nights food has soured on his stomach and he has vomited. Appetite, poor. Bowels, very loose. Pain in small of his back, and at night pain in the epigastrium. Eructations of gas. Feels weak. No urinary symptoms. Best weight, 170. Present weight, 153. H. G., 60%. Urine, negative. P. E., P. D. and N. Color, dusky, pale. Pupils react to light and accommodation. Right pupil a little smaller than left. Tongue, smooth and grayish. Pulses, equal, regular, 94. Some sclerosis. Lungs, negative. Heart, not recorded. Liver at upper border of sixth rib, doubtfully felt four fingers' breadths below C. B. in mammary line. Spleen not palpable. Abdomen not enlarged.

Feb. 26, 1905. Has been incapacitated since June. Looks sick, lemon yellow color. Has pain in epigastrium after every meal, and vomits once or twice daily. Abdomen is rather rigid and there is resistance above the umbilicus over area of pain. Thinks he has been in this condition for about two years. Advised admission to Boston City Hospital.

Case VI. O. W. M., sixty; married; currier; born in Ireland. F. H., negative. Past history, uneventful. Habits excellent. Present illness: Five to six weeks ago rocked over backwards in a chair; fell on his left side which was sore for two or three weeks. Soon afterwards began to cough up a thick, yellow sputum, continued three or four weeks; has had similar cough in springtime before. Urinary symptoms suggestive of prostate. Appetite is fair; but has grown progressively weaker since his fall, and tires easily. Has lost about twenty pounds in past year. Bowels, regular. P. E. Best weight, 180. Weight to-day, 161. Temperature, 99.5. Hg. 75%. Urine, S. G. 1,015; alb., sl. p. tr.; sed., very slight, one fatty round cell; no crystals; no pus; no blood; two hyaline casts; occasional leucocyte. Occasional squamous. P. N.: Cachectic. Slight jaundice? Eyes, normal. Tongue, heavily coated. Heart, no enlargement, systolic murmur transmitted outward. Pulse, 76, high tension, very slight atheroma. Lungs, negative save for a few scattered râles. Abdomen, liver four fingers' breadth below costal margin. No masses felt but a resistance and dullness in epigastrium. No edema. Blood, marked achromia, slight poikilocytosis, no leucocytosis, no normablasts, no megaloblasts.

A provisional diagnosis of carcinoma was made in this case but sufficient study was not allowed to confirm it. The man died at his home within a few days of his first visit to the hospital.

Case VII. Mrs. M. S., ninety-two; widow. Has always had good health. At the age of fifty had violent headaches relieved by vomiting. P. I.: Aug. 10, felt nauseated in forenoon and in the afternoon was seized with violent pain in the epigastrium followed by uncontrollable vomiting. Her family did not know whether she had been constipated or not but had heard her say that during the previous six months her movements had not been satisfactory. A number of the usual sedatives were tried through the day and night but the vomiting continued. The following day there was a cessation of vomiting in the forenoon but in the afternoon it began as vigorously as ever. It was decided to administer a sixth of a grain of morphia hypodermically, under the influence of which she slept for four hours and awoke entirely free from pain and vomiting. Very soon, however, the pain and vomiting came on as violently as before. On the third day the tongue had become dry and furred; absolutely nothing would remain on the stomach. The pulse became irregular and intermittent and the vomitus fecal in character. The heart, lungs and urine were negative. The abdomen was slightly distended and on the left of the umbilicus was a rounded sausage-like mass extremely tender on pressure. The liver and spleen were not palpable. No glands. Rectal examination negative. During this period request for surgical consultation was several times made but refused by the family largely on account of the extreme age of the patient. Under the influence of morphia the patient was perfecly comfortable and able to take nourishment and retain it as long as the effect of the drug lasted. Using this as a guide the patient was given a sixth of a grain of morphia and a half hour later one ounce of castor oil prepared with lemon and whiskey. A high enema had been given without result. In about four hours after the oil was given the patient had several very large foul-smelling movements. No blood in vomitus or stools. These movements diminished the vomiting but the epigastric pain was present at intervals and the tender sausage-like mass persisted. During all of this time the temperature was normal. On the afternoon of the sixth day I was called very hurriedly to see the patient because she had vomited as much as half a wash-bowl of fresh blood. This I presume was due to the over burdened portal system, consequent upon the intestinal obstruction. During the next two weeks the pain considerably diminished, the patient was able to take some liquid nourishment by the mouth although she had been fed by nutrient enemata from the third to the sixth day of the attack. For a few hours on the tenth day patient had aphasia and partial motion of right arm. Again in November the patient had another attack of nausea and vomiting which lasted only two days, and a similar attack in January lasting about the same length of time. Both of these attacks were promptly controlled by the treatment used at the first one. The diet was carefully regulated, one to two drams of castor oil were given every two weeks as a routine, and cleansing enemata were given as indicated. The stools were carefully watched and if there was any evidence of constipation more active measures were used. Prior to August it was noticed that the patient became gradually thinner which, taken in conjunction with the mass in the abdomen, I felt justified in assuming that we were dealing with a slow growing malignant growth of the bowel. The stomach contents was not analyzed but it has been shown that HCl is normally absent in the stomach washings of the aged. After eight months the tumor began to gradually diminish and has finally disappeared. The patient has gained in weight and eats everything with the exception of certain common sense restrictions; the bowels are kept regular by giving a 5 gr. cascara tablet every night. If the tongue becomes a little coated and the breath foul a small dose of castor oil corrects these abnormalities in twenty-four hours.

Case VIII. Mrs. M. L., sixty-four; married. In 1901 I saw Mrs. L. with gastralgia. Her history was that she had had for twenty years attacks of abdominal pain, generally in the epigastrium, occurring sometimes as often as twice a week. During this period it had been her custom to take considerable quantities of indigestible food, such as spiced meats, rarebit or rich salads often as late as twelve o'clock at night. In the afternoon of May 4 she began to have pain in the epigastrium following a midnight lunch of salads and spiced meats. She was nauseated but did not vomit. One tenth of a grain of apomorphia caused two or

three attacks of vomiting. Hot water with one eighth of a grain of morphia caused relief, and two hours of sleep. Temperature and pulse normal. This illness confined her to bed for one week, but there was gradual improvement; no mass in the abdomen was felt.

On May 9 the temperature was 101.5, the pain in the epigastrium had ceased but was located well to the right under the costal border and extending down for about three inches over the liver area which was tender. May 11, the temperature had diminished to 99.9. There was some pain in the back and over the liver but not as marked as before. The bowels were open. From this time convalescence was uneventful and patient had no need of medical attention until the end of July, 1904, when at the beach, she was seized with vomiting, diarrhea and pain over the liver. A physician who saw her found the liver enlarged and considered the condition serious but did not make a positive diagnosis. A consultant who saw her at this time made a similar statement. She had been ill about three weeks when I saw her on Aug. 11. The temperature ranged between 99 and 100, the liver was tender and a smooth surface and even edge could be felt. The other organs were entirely negative. No masses were felt in the abdomen. Urine, negative. The patient was seen Aug. 22 by Dr. W. W. Gannett in consultation. At that time he considered a chronic fibrous hepatitis as the probable condition. Aug. 29, Ewald test breakfast; stomach tube passed without any obstruction, 13½ dr. expressed. No mucus. Free acid (HCl), .05%. Total acid, .20%. No lactic acid. Hg. 60%. Aug. 31, began to have rise of temperature, flushed cheeks, râles in both backs, tongue dry and tremulous. Liver area at level of umbilicus. Patient has varying degrees of comfort, and prior to this date has sat up occasionally. Sept. 8, question of ascites; edema of the right leg since Sept. 3; tongue, rough, dry, brownish coat; pulse 88; no jaundice. Bowels are moved by daily cathartic. Sept. 12, patient seen by Dr. W. P. Bolles. At this time the cachexia was marked, emaciation of the face, which had not been striking before, appeared, the liver seemed slightly roughened and had increased to one half inch below umbilicus. No jaundice. Although there was no vomiting and no mass to be felt in stomach or intestines (possibly because it was obscured by the large, over-lying liver), Dr. Bolles considered the case one of carcinoma of the stomach with secondary hepatic involvement. Sept. 19, death; no autopsy. This was probably one of chronic hepatitis with carcinomatous involvement.

CASE IX. E. C., sixty; gardener; born in Ireland. Has always been well and of excellent habits. For the last six months has been losing in weight but has had fair appetite and digestion notwithstanding a little pain in epigastrium each day. Three months before I saw him he called the attention of his son to a lump which appeared just under ensiform cartilage. His son urged him very strongly to consult his physician but apparently he was not sufficiently impressed with the importance of any of his symptoms to heed this advice. Oct. 6, 1904, at half past three, while at work, had some sharp pain in epigastrium, returned home, went to bed and sent for me. I saw him at half past eight and succeeded in relieving his pain and vomiting. A few hours later he was seen in consultation by a surgeon who agreed that a carcinoma of the stomach had perforated. It seemed, from the complete cessation of all the active symptoms, that the perforation had probably walled itself off. When I saw him late in the evening of the following day his pulse had grown weak but there was no pain and nothing to be felt in the abdomen save the rigidity of the recti muscles. The physical examination had been entirely negative. He died thirty-one hours after the onset of his pain. Here was a man who during six months suffered constantly from epigastric pain, never, to be sure, very severe at any time. Increasing emaciation and at times a visible mass in the abdomen, yet he did not consider his condition serious.

CASE X. A. S. L., sixty; widower; stableman; born in Connecticut. Father died of phthisis. P. H. Sixteen to eighteen years ago lost power in all limbs for three months, similar attack of vomiting to the present six months ago. Alcohol, three to four whiskeys daily. P. I. During the last eight months has vomited with increasing frequency; for one month has been unable to eat bread or meat because it is immediately vomited. Considerable epigastric pain immediately after eating. Raises considerable white, tasteless sputum in the morning, partly by coughing and partly by vomiting. No blood in the vomitus. Bowels move once daily. Micturition twice at night. Some palpitation on exertion; very little loss of weight. P. E.: F. D. and N. Pupils, normal. Heart, right border normal, left border nipple line; apex in fifth space; action rapid, strong, irregular; no murmurs. Lungs: hyperresonant especially on left. Breath sounds harsh and expiration slightly prolonged (emphysema). Numerous dry râles throughout both backs. Abdomen: liver dullness about 6 cm. below costal margin, slightly tender on pressure. Splashing over stomach; a resistance felt over pyloric end. K. J. diminished. Pulse, small and irregular; arterial walls very hard; temples very tortuous. Three days later patient having been upon strict diet of milk and lime water, all the symptoms had subsided.

This case has been included to show that vomiting and an extensive alcoholic cirrhosis were quickly relieved by treatment.

There are two other cases, one a man of seventy, the other a woman of sixty-seven, with persistent vomiting, pain in the epigastrium, marked emaciation and cachectic, with cough. Both of these patients had the appearance of carcinoma but an examination of the sputum showed the presence of the tubercle bacillus.

How are we to determine what case shall be operated upon? As yet we have no sign, especially no laboratory sign; if we rely upon this or that indication we will surely fail. None of the tests are reliable.

Arneill found varying amounts of free HCl in the stomach contents in five of eleven cases of undoubted cancer of the stomach, and in all of nine cases of pernicious anemia free HCl was absent as well as the absence of combined HCl and lactic acid. The stomach washings of several cancer cases showed a good amount of HCl.

I well remember a patient in Ward G of the Boston City Hospital when I was house officer, who repeatedly showed an entire absence of HCl and in other ways suggested carcinoma. She had a perforation, and at autopsy a round ulcer of the stomach was found. If we could have operated upon her with our present ideas and improved technique there is little doubt but that her life would have been saved.

The Opler-Boas bacillus has no more value than pointing to the fact that there is little HCl and considerable lactic acid. The latter destroys other organisms in the stomach contents but acts as a good culture media for the "long bacillus."

Various tests have been made and Sigel, in the Berliner klinische Wochenschrift, 1904, Nos. 12 and 13, discusses the merits of: The tryptophan reaction; Salomon's albumin test; Gluzinski's test; the estimation of the fatty acids in the urine.

It is not within the scope of this paper to analyze the value of these methods but merely to quote Sigel in his statement that the first three are of value but none are accurate enough to cover every case. It is our duty to apply every reasonable test in forming our decision upon each case. No one test can be relied upon; the general picture must be taken, the picture of symptoms, diagnosis, and after-treatment. With improved surgical technique the exploratory operation becomes a simpler matter. The physician, surgeon, patient and friends must at times suffer disappointment, if it may be called such. The abdomen, if we open early, will show nothing perhaps when the symptoms were striking, or grave disease beyond all hope of surgical relief even when the symptoms have been slight and we think we have seen the patient early in the course of the disease.

It is hardly our fault if the patient does not note his symptoms sufficiently early for medical or surgical help. I suspect that some of the cases of perforating ulcer without previous symptoms may be in this class. The history of such a case of malignant disease of the stomach has already been given. Some three years ago I performed an autopsy upon a gentleman of seventy and found an adeno-carcinoma which occluded the lumen of the bowel. He was the patient of a very able physician whom he frequently saw and consulted, yet the first symptoms of which he complained were those of intestinal obstruction three weeks before his death.

Last July I cared for a lady in the absence of her physician; he had already given me her history which was that she had been perfectly well save for chronic rheumatism until three months before when she complained of obstinate constipation. He wished to make a rectal examination but she declined for prudish reasons. After a month of catharties given with but small effect he insisted upon an examination and found a large growth occluding the rectum. She had never had the slightest pain nor any other symptom except constipation. An artificial anus was made but she died about six weeks later. These cases naturally do not help us in the treatment of others but they show how a rapidly growing carcinoma may be almost without symptoms. In this last case surgery was at the same time a first and last resort. For such patients as these surgery will never offer more than a minimum of relief. If we can find the specific cause of cancer all cases may then pass out of the domain of surgery and some that are now considered hopeless at such a stage may be checked, perhaps cured. In the interim we must look as carefully as ever for all signs which will point to the early diagnosis of benign and malignant disease of the abdomen.

Reports of Societies.

AMERICAN SURGICAL ASSOCIATION.

TWENTY-SIXTH ANNUAL MEETING, HELD AT SAN FRANCISCO, CAL., JULY 5, 6 AND 7, 1905.

(Concluded from No. 12, p. 342.)

A SUMMARY OF ALL THE CASES OF FRACTURE OF THE SPINE (244) WHICH WERE TREATED AT THE BOSTON CITY HOSPITAL FROM 1864 TO 1905.

DR. H. L. BURRELL of Boston contributed a paper on this subject, in which the author presented the following conclusions: (1) That fractures of the spine may well be divided into two classes; *first*, fractures of the spine with injury to the cord; and, *second*, fractures of the spine without injury to the cord. (2) That it is not best to decide what the treatment of an individual case of fracture of the spine should be from the statistics, because the lesion varies so widely. (3) That in many cases of fracture of the spine it is impossible to state primarily whether the cord is crushed or pressed upon by bone, blood, or exudate, except by an open operation. (4) That only by the persistence of total loss of reflexes, complete insensibility to touch and pain, and motor paralysis below the level of the lesion can total transverse destruction of the cord be diagnosed. (5) That if pressure on the cord is allowed to remain for many hours irreparable damage to the cord may take place. (6) That unless it is perfectly clear that the cord is irremediably damaged, an open operation to establish the condition of the cord and to relieve pressure is imperative as soon as surgical shock has been recovered from. (7) That in certain cases of fracture of the spine, when the cord is not injured, but is liable to injury from displacement of the fragments of a vertebra, rectification of the deformity and fixation of the spine may be used. (8) That if the cord is crushed, no matter what treatment is adopted, there will of necessity be a high rate of mortality.

CASE OF SUTURE OF THE SPINAL CORD FOLLOWING A GUNSHOT INJURY INVOLVING COMPLETE SEVERANCE OF THE STRUCTURE.

DR. GEORGE RYERSON FOWLER of Brooklyn, N. Y., reported the case of A. E., aged eighteen, clerk, born in America, single. The patient was admitted to the Brooklyn Hospital on April 28, 1903. He gave the following history: He suffered from pneumonia several years ago. Four years ago, while working at a machine, his left hand was caught in the latter, and so badly crushed that it became necessary to amputate four fingers. He had gonorrhea six months ago; no discharge at the present time. Shortly before admission he was shot in the back, his assailant using a 38-calibre revolver, at a distance of about thirty feet; the shooting took place somewhat from the right side. He suffered severely from shock, and paralysis of the lower extremities occurred at once. The bullet wound was located one and a quarter inches to the right of the median line and on a level between the tenth and eleventh dorsal spines. He was found to be paralyzed below the waist; sensation was absent over all of both lower extremities, and over the abdomen as high as one inch above the crests of the ilia on the sides, and about halfway between the symphysis and the umbilicus in front. Bladder and rectum were also paralyzed. The bowels moved involuntarily and irregularly, and without the volition or cognizance of the patient. There was considerable twitching of the muscles of both legs, especially the toes.

Operation May 9, 1903. Ether anesthesia. An incision was made, six inches long, over the spines of the vertebræ, the middle of the incision resting upon the eleventh dorsal spine. The laminæ of the tenth, eleventh and twelfth vertebræ were removed by the chisel. The bullet was found lying transversely between the severed ends of the cord, concealed from view by a large blood clot. A very narrow, ragged, and contused strip of dura, scarcely more than one sixteenth of an inch in width, remained intact. The blood clot was carefully sponged away and the bullet removed. The ends of the cord were then sutured with three fine chromicized catgut sutures, the dura being included in the sutures. No special difficulty was experienced in drawing together the ends of the cord and closing the defect, the latter representing in width the diameter of the 38-calibre bullet. The dura was further secured with a number of sutures of fine catgut, and a drain consisting of a half dozen narrow strips of oiled silk protective introduced. The skin incision was sutured with silkworm gut.

On May 30 the following note appeared on the hospital record: "Wound healed, upper line of anesthetic area from one and a half to three inches lower than before operation. Twitching of toes of both feet and occasional clonic muscular spasms of the flexors and extensors of the thighs; the patient says his 'feet jump up on him.' Can feel the bowels move, but is without control of the rectum. Can feel distention of the bladder with urine, but is without control."

The main points of interest in this case related to the possibility of regeneration of the spinal cord following a destructive lesion. Prior to the report of Dr. F. F. Stewart's case, in which Dr. R. H. Harte sutured the cord after it was severed by a bullet, it was the opinion of the majority of investigators that such regeneration in man was impossible. Mikulicz, of Breslau, endeavored to demonstrate the possibility of a successful regenerative process in the lower animals following section of the cord, but without result. Spiller and Frazier found that after division of a posterior root in the dog, followed by immediate suture, regeneration occurred, and that regeneration into the cord did not occur.

In Dr. Fowler's case, twenty-six months after the injury, voluntary motion was practically lost in the affected area. The patient was able to stand when supporting himself by the hands resting upon an apparatus, and to make some locomotion by swinging movements in a special frame on wheels. The bladder and rectum control was doubtful, to say the least, the former acting automatically. The patient had the sensation that the bladder and rectum were about to empty themselves, and if the urinal or bedpan were brought to him promptly soiling was prevented. The amount of urine passed in this manner probably averaged more than a pint in the twenty-four hours. The urine was sometimes voided during sleep. Sensation was practically abolished in the entire affected region, with the exception of an area about five inches in length extending down the outer side of the right thigh, where some sensation was present. He was not able to correctly distinguish between heat and cold. Tactile sensations were recognized, but were usually referred to a point two or three inches distant from the point touched. Marked rigidity and spasticity of both legs were present. Patellar reflex exaggerated; Achilles reflex marked. Ankle clonus present on one side and absent on the other. The reaction of degeneration was absent. Bed sores developed in the third month; these extended to the muscles and were six months in healing. The skin showed but slight, if any, evidences of trophic disturbance.

A final and important comment was suggested in comparing this case with the Stewart-Harte case, namely, the Stewart-Harte case was operated on three hours after the injury, while in Dr. Fowler's case upwards of ten days had elapsed before consent to interfere operatively was obtained. The prolonged separation of the divided ends of the cord and the presence of the foreign body had, in all probability, an influence in preventing a complete regeneration of the cord, as occurred in the first case, provided, of course, that regeneration did actually occur. While the case in hand was, therefore, not as striking in many of its features as the Stewart-Harte case, the author thought it presented some points of interest, and for this reason was offered as a contribution to the literature of the subject.

THE SURGICAL TREATMENT OF INTRASPINAL TUMORS.

DR. RICHARD H. HARTE of Philadelphia said that the science of spinal localization was now so well developed that it usually was not difficult to determine with accuracy the location of an intraspinal growth. What was usually understood by the term tumor of the spinal cord was an extramedullary but intraspinal growth, like a sarcoma, a fibroma, or a myxoma, giving no evidence of its existence except by the symptoms of medullary pressure which it produced. There had been found records of 92 operations for spinal tumors, among which number 43 patients died, a total mortality of nearly 47%. The nature of the tumor was recorded in 88 of the reported cases. It was sarcomatous in two fifths of the whole number (37 cases); adhesions, thickenings, etc., hold second place, with 11 cases; then came echinococcus, 8 cases; fibroma, 6 cases; syringo-myelia, 5 cases; endothelioma, 4 cases; psammona, 3 cases; cyst, 3 cases; fibro-myxoma, 2 cases; osteoma, 2 cases; and 1 each of myeloma, lipoma, lymphangioma, dermoid cyst, primary and secondary carcinoma, and one tumor of bone whose nature was not stated.

The author reported an interesting case of paraplegia from Pott's disease in which he resorted to laminectomy, with great improvement.

With very few exceptions, he said it was impossible to determine the nature of the tumor before operation.

He reported a case of dermoid cyst of the spinal canal on which he operated, followed by recovery, the patient being a girl seven years of age.

Of 82 cases in which the region of the spine affected was given, the upper dorsal region was involved in 33 cases, or over 40%. The tumor was found in the lower dorsal region in 24 cases, in the lumbo-sacral region in 14, and in the cervical region in 11 cases. The cause of death was given in 28 cases. One half of these was due to shock and hemorrhage, or to infection and meningitis, there being 7 fatal cases under each of these categories. Eight patients died from exhaustion, 3 from recurrence of malignant growths, 2 from hypostatic pneumonia, and 1 from bed sores and sepsis.

As regards the technic of the operation, it was essentially the same as when employed in traumatic cases.

TUBERCULAR CONDITIONS OF THE SPINE REQUIRING SURGICAL AND MECHANICAL RELIEF.

DR. DE FOREST WILLIARD of Philadelphia stated that the principal surgical measures employed for the relief of spinal caries were laminectomy for paraplegia; forcible gradual straightening; erasion of carious bone; forcible immediate straightening of the kyphosis; wiring of spinal processes; evacuation of pus accumulations; long-continued fixation of the column, and hygienic measures to prevent the necessity for operative interference.

Complete, methodical and long-continued fixation of the spine in the position of hyperextension, with healthful surroundings in the sunlight were the prime factors in securing new ossific deposit necessary to replace the carious bone. Laminectomy for paraplegia was advisable only after long-continued and patient treatment along the above-named lines from one to two years, since the prognosis, especially in children, under these conditions was favorable and good powers of locomotion might be confidently expected. The operation was justifiable in selected cases where loss of motion and sensation was progressively worse and the symptoms threatened life. If the tubercular masses within the spine could be removed, and if extradural pachymeningitic deposits or pus could be taken away, improvement might be expected, and in many cases relief occurred. The operation had a mortality of about 25% from immediate shock; 36% within a month, while one half the cases died within the next year, their lives being probably shortened by the operative procedures; cases of non-improvement and death equalled nearly 65%.

Forcible immediate straightening of the kyphosis was an unsurgical and dangerous proceeding; it was liable to re-awaken the tubercular disease and to weaken the column. Forcible gradual straightening by supporting the kyphotic area upon a pedestal was a valuable agent in relieving deformity. The weight of the shoulders and pelvis could thus be utilized as straightening forces, and the weight of the column thrown upon the posterior arches. In this position it was permanently fixed by plaster of Paris. Complete erasion of the carious bodies of the vertibræ was an uncertain operation, in the dorsal region requiring section of ribs, with danger of wounding the pleura. Wiring of the spinous processes had never been sufficiently tried to demonstrate its helpfulness. Spinal abscesses which contained only liquefaction of caseation should be aspirated. When true pus formed, aseptic through drainage was advisable.

TUMORS OF THE SPINAL CORD.

Dr. J. Collins Warren of Boston read a paper on this subject in which he reported three cases of tumor of the spinal cord operated on with good results.

SPINA BIFIDA.

Dr. James E. Moore, of Minneapolis, Minn., read a paper on this subject in which he presented an analysis of three hundred and eighty-five cases treated by excision. A careful study of these reported cases, illustrating the experience of many surgeons, justified him in drawing the following conclusions: "(1) Operation upon children of very tender age is scarcely worth while because it is accompanied by so large a mortality rate, and because it does not stop the progress of progressing cases. (2) Patients five or more years old can be operated upon safely. (3) Patients with large or rapidly growing tumors, with hydrocephalus and with paralysis or deformities of the extremities are not cured. Finally, all we can hope to accomplish by operation for spina bifida is to relieve the patient of an unsightly and annoying tumor after he has survived the dangers of the affliction *per se*."

EXOPHTHALMIC GOITRE TREATED SURGICALLY.

Dr. Thomas W. Huntington of San Francisco, Cal., said that during the past three years he had treated surgically nine patients suffering from exophthalmic goitre. In each instance partial ablation of one or both lobes of the thyroid was done, and one patient was subjected to three operations successively. Seven were females and two were males. The ages ranged from twenty-eight to fifty-six, the average age being forty-two years. In five patients the development of symptoms of Graves' disease was associated with pre-eixsting enlargement of the thyroid. Two of these were cystico-colloid. In four the development of characteristic symptoms was simultaneous with glandular hypertrophy. All of these were colloid. In the five cases where the exophthalmic condition developed secondarily pre-existing glandular hypertrophy was noted during a period of six, ten, thirty-four, thirty-five and thirteen years, respectively. In this series exophthalmic symptoms had been noted one, two, three, two, and two years prior to operation, the average being one and four fifths years. Duration of symptoms in the primary or pure Basedow cases prior to operation was two years, three months, two months, and one year, the average being seven and one fourth months. In this series eight patients survived the operation and are now living. One patient died on the twelfth day. The eight living patients were carefully watched and their status definitely recorded up to date. The author gave a detailed account of each case as it occurred.

A wider experience in this particular field had increased his faith in the value of surgical interference in carefully selected cases, and in conclusion he repeated what he wrote in an earlier communication, namely, the argument for early operation in malignant disease applied here with equal force. Extirpation should be undertaken before destructive changes had occurred, before the function of important organs was seriously, perhaps permanently, injured, and the patient's vitality lowered by chronic thyroid intoxication.

A REVIEW OF FIVE HUNDRED CASES OF GASTRO-ENTEROSTOMY, INCLUDING PYLOROPLASTY, GASTRO-DUODENOSTOMY AND GASTRO-JEJUNOSTOMY.

Dr. William J. Mayo of Rochester, Minn., stated that this included all the cases operated on by Dr. Charles H. Mayo and the writer during fourteen years in which an incision was made in both intestine and stomach, and plastic union established to increase gastric drainage. The death-rate gave every case dying in the hospital without regard to the cause of death or the length of time after operation. Of pyloroplasty there were 21 cases with no deaths, and 7 re-operations. Pyloroplasty had only a small field of usefulness. Finney's gastro-duodenostomy, 58 cases, 4 deaths, 2 from other causes at a late date; only 1 death in the first 46. The author said that there was a large field of usefulness for this operation in narrow stricture following healing of ulcers, but it was less useful in unhealed ulcer.

Of gastro-jejunostomy there were 421 cases; benign, 307; death-rate, 6%. Last 140 cases, 4 deaths. Malignant, 114; death-rate, 18%. In the last 40, including radical operations for cure of cancer, 5%. Murphy button, 157 operations, 139 anterior and 18 posterior. This was the operation of choice after pylorectomy and partial gastrectomy. McGraw ligature, 36 operations. This was the operation of choice by the anterior method in gastro-jejunostomy for inoperable cancerous pyloric obstruction. Two hundred and twenty-eight posterior suture operations. Robson's bone bobbin, 16 operations, with 1 death. Mikulicz operation, transverse incision, 43 operations, with 4 deaths and 4 secondary operations. Moynihan operation on 9-inch loop, 53 operations, with 3 deaths; 7 re-operated for chronic bile regurgitation within fifteen months. Roux-Doyen operation, 48 cases, 2 deaths, 2 secondary operations. Operation of choice was the Moynihan-Peterson without a loop; made by suture within 3 inches of the origin of the jejunum

and obliquely on the posterior wall of the stomach, with the inferior margin at the greater curvature near the junction of the pyloric end with the body of the stomach. Last 80 gastro-jejunostomies for benign disease, only 1 death.

A SIMPLE ASEPTIC SURGICAL TECHNIC.

DR. DUDLEY P. ALLEN of Cleveland, Ohio, related observations which were based upon a series of 377 bacteriological examinations of the hands, made at the close of operation, and upon the clinical results obtained in 3,500 cases. The bacteriological investigations were conducted in 5 series. In series "A" the cleansing of the hands was with soap and water, scrub brush and nail cleaner. The hands were then sterilized in Harrington's solution. In operating, the hands were encased in rubber gloves in which was sterile water. Twenty-six observations were made by taking cultures from the hands at the close of operation. In each case the cultures were negative. In series "B" the washing of the hands was as in series "A." Twenty-four observations showed that cultures were negative in each case. In series "C" the washing was as in series "A," with the addition of thorough subsequent washing in 70% alcohol. In 42 observations the staphylococcus pyogenes albus was found in 8 cases, or in about 20%. The conclusion reached was that alcohol was not efficient as a disinfectant and did not prevent the development of bacteria within the rubber gloves containing no germicide but simply sterile water. From these observations it would seem probable that if bacteria developed upon the hands sterilized by alcohol, when in gloves containing simply sterile water, they would develop in the same manner upon the hands prepared in the same way if encased in dry gloves with powder as the hands became moist with perspiration.

In series "D" the hands were prepared as in series "C" and then washed in a solution of bichloride of mercury 1-5,000, and encased in rubber gloves containing the same solution. Sixty-four observations were made. All were negative except one. In this were found the staphylococcus pyogenes albus.

In series "E" the hands were washed as in series "A," and then thoroughly washed with a solution of bichloride of mercury 1–5,000, and encased in rubber gloves containing the same solution. One hundred and two observations were made. The Hay bacillus was found in one case.

In series "F" the hands were washed as in series "D" and then cleansed in a solution of bichloride of mercury 1–3,000 and encased in gloves containing the same solution. Seventy-five observations were made. The staphylococcus pyogenes albus was found in a single case.

The clinical observations were made upon a series of 967 laparotomies. Of these, 687 were clean and 288 were septic before operation. There were 2,533 operation other than laparotomies. This gave a total of 2,139 clean operations. For the purpose of study the clean cases only were taken, since the question of asepsis evidently could not be studied in cases septic before operation.

Tables were presented by the author showing the results obtained in all of the various series of operations, as in hernia, varicocele, varicose veins, and laparotomies of all kinds and other miscellaneous operations. The results showed from the whole series of 2,139 clean operations but 2 deaths from sepsis. Erysipelas developed but once. Stitch abscess occurred in 58 cases, or in about 2.25%.

The method of cleansing the hands finally adopted was to wash them thoroughly with soap and water, using the scrub brush for the palms of the hands, but only slightly upon the backs of the hands, and never upon the arms, the object being to avoid irritation of the integument. The nail cleaner was used only beneath the nails and not around the bases of the nails. The hands and arms were then washed in a solution of bichloride of mercury 1–5,000, and encased in rubber gloves containing the same solution. The belief of the writer was that the continued action of the solution of bichloride of mercury in the gloves was a fundamental safeguard in preventing the development of bacteria within the gloves during operation. That this was true in practice was shown by the results obtained in the large number of cultures taken at the close of operation.

The conclusions reached from the various series of cultures and clinical cases were, first, that Harrington's solution, although efficient, was undesirable, since it caused marked irritation of the hands and arms. Second, that washing of the hands and arms should not be too violent, and that the use of the scrub brush should be confined to the hands. The arms should be washed by rubbing with gauze or a towel. The use of the nail cleaner about the base of the nails was unnecessary. Alcohol was not adequate as a germicide when used upon the hands. That a solution of 1–5,000 bichloride of mercury, used after washing to disinfect the hands and arms, and then used in the rubber gloves, was thoroughly satisfactory in protecting against the development of bacteria within the gloves during operation. That the rubber glove was a guarantee of safety, not only to the patient but to the operator himself, when operating upon infected wounds. That a mask over the face was not necessary.

INTUSSUSCEPTION.

DR. MAURICE H. RICHARDSON of Boston, Mass., reported a case of intussusception in a boy of four. Vomiting and pain, with intestinal obstruction and a tumor in the left abdomen suggested very strongly the diagnosis. The operation showed an invagination of the small into the large intestine, so firm that reduction seemed impossible. The child's condition was so bad that an enterostomy was performed, in the hope that a cure would be effected by spontaneous sloughing of the invaginated gut, life meanwhile being maintained through the enterostomy. Unfortunately, the child died at the end of eighteen days, the immediate cause of death being a purulent bronchitis. At the autopsy no trace of the intussusception could be found. A careful search through the literature showed no case of spontaneous reduction of an intussusception in which the chain of evidence was absolutely complete. In this case the diagnosis made before operation and demonstrated before the staff of the Massachusetts General Hospital and a large audience was unassailable. The lesson taught by this case would seem to be that greater efforts should be made for reduction, either by hydraulic or air pressure through the rectum or by manipulations after the abdomen had been opened. In the reader's experience, however, the results have been fatally compromised by just such efforts. It seemed, therefore, questionable whether, in view of the great rarity of spontaneous reduction and of the almost universal failure of the milder palliative measures, one will ever be justified in selecting any but those operative measures which, undertaken at the earliest possible moment, cannot fail to remedy completely and effectively the disease.

CONSTRICTION OF THE DUODENUM BELOW THE ENTRANCE OF THE COMMON DUCT AND ITS RELATION TO DISEASE.

DR. A. J. OCHSNER of Chicago read a paper with this title. In a series of cases operated for the relief of cholecystitis it was found that there was frequently

present a constricted condition of the duodenum just below the entrance of the common duct. This was usually accomplished with dilatation of the duodenum above this point.

The dissection of a number of cadavers demonstrated the fact that there was present a marked increase in the circular muscular fibers of the duodenum beginning at a point from 1 cm. to 3 cm. below the entrance of the common duct and extending for a distance of 1 cm. to 4 cm., forming a broad sphincter. It seemed likely that this sphincter had much to do with the physiological function of the duodenum, facilitating the mixing of chyme with bile. It also seemed likely that this sphincter served the purpose of establishing a condition of rest in this portion of the alimentary canal in case of irritation of the biliary or pancreatic ducts.

The paper was fully illustrated and the author gave a tabulated list of fourteen cases of dilatation of the duodenum which he had met with among his patients operated for the relief of gall-bladder disease.

PERFORATION OF THE GALL BLADDER.

Dr. Archibald MacLaren of St. Paul, Minn., read a paper on this subject in which he reported ten cases, and said that gall-bladder perforations were comparatively rare, especially if observations were confined to ruptures due to violence, ulceration and gangrenous inflammations. But if we added to these the cases of cholecystitis in which inflammatory products had evidently escaped from or passed through the wall of an inflamed gall bladder, even though we may not find the perforation itself, the number of cases was considerably increased.

Such abscesses about the gall bladder either in the free peritoneal cavity or in the neighboring liver tissues were rare as compared with appendiceal abscesses, but were not uncommon, and unquestionably should be included when studying perforations of the gall bladder.

Fistulous passages between the gall bladder and duodenum, stomach or colon were, of course, due to perforation of the gall bladder.

Most perforations of the gall bladder occurred in neglected cases where gallstones had been known to exist for long periods of time and where the patient had had ample warning through many attacks of biliary colic. Of Robson's 539 operations on the gall bladder and bile ducts, 25 of these cases could be fairly said to be perforative in character. Dr. Mayo in 328 cases found 16 perforative cases. Dr. Ochsner in 48 cases operated upon found one perforation. He had operated upon 80 gallstone cases, 9 of which were perforative in character, and one post-mortem, making a total of 10, which seemed a large proportion as compared with other lists of cases already on record. There were 8 recoveries and 1 death. In this fatal case, he believed that the result would have been the same even though the gall bladder had been removed, because with gangrene of the gall bladder and neighboring liver tissue, and especially in the presence of a localized abscess, any operative work which disturbed the abscess wall would only have spread the infection and lessened the chance of recovery.

He believed that in any perforative case which had gone on to the formation of a localized abscess the wisest course was to open and drain the abscess, waiting until a later time to deal with the gallstones or the disease of the gall bladder.

Dr. Emmet Rixford of San Francisco read a paper in which he discussed the subject of excision of portions of the chest wall for malignant tumors and reported cases upon which he had operated.

OFFICERS.

The following officers were elected for the ensuing year: *President*, Dr. Albert Vander Veer, of Albany, N. Y.; *vice-presidents*, Dr. James E. Moore, of Minneapolis, and Dr. John C. Munro, of Boston; *secretary*, Dr. Dudley P. Allen, of Cleveland, Ohio, re-elected; *treasurer*, Dr. George R. Fowler, of Brooklyn, N. Y., re-elected; *recorder*, Dr. Richard H. Harte, of Philadelphia, Pa.

Cleveland, Ohio, was selected as the place for holding the next annual meeting, the time for which is to be fixed by the Committee on Annual Meeting.

Recent Literature.

Practical Problems of Diet and Nutrition. By Max Einhorn, M.D., Professor of Medicine at the New York Post-Graduate Medical School and Hospital and Visiting Physician to the German Hospital, New York. New York: William Wood & Co. 1905.

Professor Einhorn has collected in this little book of sixty-four pages six papers published by him in the interval between 1893 and 1905 on dietetic subjects. The book lays especial stress upon the importance of gain in weight for dyspeptics.

We confess our surprise that the author has not revised his diet in hyperacidity in the last twelve years and that the book does not show the influence of Pawlow's discoveries. Though it cannot claim to be modern, many hints which it presents will be found to be useful.

Findley's Gynecological Diagnosis. A Treatise on the Diagnosis of Diseases of Women. For Students and Practitioners. By Palmer Findley, B.S., M.D., Assistant Professor of Obstetrics and Gynecology, Rush Medical College in affiliation with the University of Chicago; Assistant Attending Gynecologist to the Presbyterian Hospital, Chicago. In one octavo volume of 588 pages, illustrated with 222 engravings in the text and 59 plates in colors and monochrome. Philadelphia and New York: Lea Brothers & Co. 1905.

In reviewing the first edition of this book we were skeptical of the need of a treatise devoted solely to diagnosis. The appearance of a second edition so soon after the appearance of the first is an indication that many readers have found the book useful. This edition is an improvement on the earlier edition in many respects, notably in those departments in which the author has done original work. The illustrations are remarkably well done and the volume is a fine example of the bookmaker's art. Several inaccuracies are to be noted, such as incorrect pictures of the Sims position on page 71; "Müttleschmertz" for Mittelschmertz on page 427, and hilus, instead of hilum, of the ovary. Carelessness in the use of English and a lack of evenness in the treatment of the various branches of diagnosis are noticeable throughout the work, faults which are not to be found in the best of the recent textbooks on gynecology.

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THE MEDICAL DEPARTMENT OF THE UNITED STATES ARMY.

A BILL has recently been circulated, designed to increase the efficiency of the medical department of the army, and published with it are endorsements by the Secretaries of War and a message from the President, showing the necessity for legislation. In the reorganization of the army, early in 1901, the medical department suffered severely owing to the fact that the recommendations of the Surgeon-General were ignored. A proportionate increase in the medical department was not made, and what increase was given was confined largely to the lower grades, still further interfering with the prospect of promotion. The natural consequence ensued, and a falling off in applicants occurred so that the vacancies have even yet not been filled. In 1901, 79 were admitted to the medical corps of the United States Army; in 1902, 42; in 1903, 27; in 1904, 11; in 1905, 4. This falling off has occurred in spite of the fact that there has been no change in standard and that every effort has been made to secure suitable candidates. Civil contract physicians have, of necessity, been employed to supplement the work of the regular medical corps. In times of peace the situation is far from satisfactory, and should there be a war, the medical administration is predestined to failure. In view of this state of affairs the Surgeon-General prepared a statement of the needs of the medical department and drafted a bill to correct the deficiency. This bill contained the following provisions:

1. It increased the number of medical officers from 320 to 450, exclusive of the Surgeon-General.
2. It reduces the length of service required in the grade of first lieutenant before promotion to captain, from five to three years, in order to correspond with the requirements of the naval service.
3. It increased the numbers in the higher grades so as approximately to conform to the promotions existing for many years prior to the reorganization of 1901, and to nearly equalize them with those existing in the medical corps of the navy.
4. It provides examinations to determine fitness for promotion up to include the grade of colonel.
5. It provides a medical reserve corps which shall constitute an eligible list of medical officers who shall have been examined, and commissioned if found fit, for service as medical officers with the rank of first lieutenant in case of war or other emergency. These reserve medical officers are intended to replace the contract surgeons, upon which the medical department depends for expansion when its numbers are found to be inadequate for the needs of the service.

The bill was sent to Congress with endorsements of Secretary Root and Secretary Taft, who both recognized the inadequacy of the present medical corps and urged, in general, the reasonableness of the requests made by the Surgeon-General. Mr. Roosevelt further supplemented the recommendation in a message and memorandum to the Senate and House of Representatives, modifications, however, having been made in accordance with views expressed by the Secretary of War. The President's attitude toward the medical department of the army we have frequently commented upon. His message on this bill expresses his well-known views in forcible fashion. He says in part:

"I am satisfied that the medical corps is much too small for the needs of the present army, and, therefore, very much too small for its successful expansion in time of war to meet the needs of an enlarged army and, in addition, to furnish the volunteer service a certain number of officers trained in medical administration. A bill which, in the opinion of the Secretary of War, of the late Secretary of War and of the general staff of the army, supplies these deficiencies was introduced at the last session of Congress and is now before you. I am also advised that it meets the cordial approval of the medical profession of the country. It provides an organization which, when compared with that of other nations, does not seem to err on the side of excessive liberality, but which is believed to be sufficient. I earnestly recommend its passage by the present Congress. If the medical department is left as it is no amount of wisdom or efficiency in its administration would prevent a complete breakdown in the event of a serious war."

On Feb. 17, 1905, the Military Committee of the House reported the bill favorably, but with certain amendments, chiefly in the way of re-

ducing the number of officers of the higher rank. These reductions are regarded as unfortunate, because, in the opinion of the Surgeon-General, there are enough stations both in peace and war to justify the assignment thereto of the number of officers and of the grade originally requested. Secondly, the number asked for restores the proportion in those grades to that existing prior to 1901. It is maintained that this injustice should be corrected, and that officers in the medical corps should be brought up to the same proportion as in other staff departments. Thirdly, the number of officers asked for corresponds closely with that in the equivalent grades of the medical corps of the navy; and, finally, it is essential that promotion beyond the grade of major may be possible in order that suitable candidates may be procured. Attention is also drawn to the fact that slight diminution in inducement seriously affects the supply of applicants. This has repeatedly been shown of late years in the experience both of the army and navy. Although the bill was passed, therefore, it seems evident that if the amendments proposed are finally adopted, it will fail of its final purpose. The higher ranks, it is very properly urged, must be maintained.

It is extremely difficult to see why our legislators continue to be short-sighted in relation to the medical department of the army. If the Japanese-Russian war has taught us anything, it is that the efficiency of a modern army depends very largely upon its medical department. In spite of this object lesson, and in spite of our miserable experience after the war with Spain, there is still a definite indisposition on the part of those who might accomplish results to face the actual facts and give to the medical corps of the army its just due. We have no doubt that the light will finally dawn, but we trust it may not be through another such bitter experience as we have recently had.

SANATORIUM METHODS IN THE HOMES OF THE POOR.

Another method of attacking tuberculosis is to be made in Boston, under the medical direction of Dr. J. H. Pratt, assisted by Dr. John B. Hawes, 2d. The plan as outlined in the *Journal of the Out-Door Life* for September, is to establish a tuberculosis class, or home sanatorium, of not more than fifty persons, in order, that there may be no lack of careful supervision. It has been demonstrated that the beneficial results of sanatorium treatment may, in great measure, be reproduced in the individual home, provided the intelligence of the persons concerned be adequate and that instructions are sufficiently detailed. If this is possible in the homes of the well-to-do, it is maintained that it should also be applicable to the poor. The application of the plan is rendered possible by the charitable organizations of Emmanuel Church and the personal interest of its rector, Rev. Elwood Worcester. Dr. Pratt hopes to make a start, at least, in providing poor consumptives with means of living an out-door life and of providing the other recognized essentials for the eradication of the disease. The work will be a supplement, and by no means a substitute, for the dispensary for tuberculosis, and naturally will in no way interfere with the work of the State Sanatorium. Unfortunately, there are cases enough for all. The actual working plan will be to provide frequent visits of a nurse, occasional visits of a physician, weekly meetings in the examining room of the class where the individual records of patients will be tabulated. Naturally, instruction in the nature of the disease will also be given and every effort will be made to take advantage of the facilities for out-door life already existing in tenement districts and to provide balconies and tents at the lowest possible cost.

We have no doubt that this plan, under the direction of Dr. Pratt, will meet with its measure of success. It will certainly tend to propagate the gospel of hygiene in a practical fashion and will supplement the many other public and private schemes of combating the disease.

MEDICAL NOTES.

Japan's Death-List. —It is reported that the number of deaths in the Japanese army during the war were as follows: Killed, 46,180; died of wounds, 10,970; died of sickness, 15,300. If this be an exact statement, it shows the extraordinary fact that less than one fourth of the total deaths was due to sickness.

Lectures on Medical Ethics. — At a stated meeting of the Philadelphia County Medical Society, held June 21, 1905, a resolution was adopted conveying a request that all medical schools furnish their senior class with a special course of lectures or addresses upon the subjects of Medical Ethics and the Business Aspect of the Practice of Medicine, and including the recommendation that graduates promptly join the local County Medical Society.

THE STATE BOARD JOURNAL OF AMERICA. — The first number of the first volume of a new journal to be known as the *State Board Journal of America* is in our hands. It is to be published monthly in the interests of boards, students and colleges of medicine, dentistry and pharmacy. The hope is to bring more closely together state board examiners, candidates of licensure and college faculties. This journal, which is attractively printed on excellent paper, and contains original articles, editorials, book reviews, examination questions and other matters of interest to the class of readers to which it appeals, should prove an acceptable addition to medical periodicals.

MEETING OF THE AMERICAN PUBLIC HEALTH ASSOCIATION. — The American Public Health Association is this week holding in Boston its thirty-third annual meeting, with an announced attendance of about two hundred members. The headquarters of the association are at the Hotel Brunswick on Boylston Street, and the meetings are being held at the Boston Medical Library and at the Young Men's Christian Association Building. We have before commented on the significance of the questions to be discussed by this association, and we have no doubt that Boston will show its appreciation of its visit, not only by clear weather, but also by a liberal attendance of those who are not members of the association.

COALITION OF INDIANA MEDICAL COLLEGE WITH PURDUE UNIVERSITY. — By the unanimous action of their respective boards of trustees the Medical College of Indiana has been made the Medical Department of Purdue University with the title of Indiana Medical College, The School of Medicine of Purdue University. The Medical College of Indiana was founded in 1869 and has graduated upwards of 1,600 students. For the first time in the history of medical education in Indiana a medical school has formed a university connection, making it an integral part of the state system of education. The location of the medical school will remain in Indianapolis, which offers the necessary clinical advantages.

DEATH OF DR. THOMAS J. BARNARDO. — In the death of Dr. Thomas J. Barnardo, a philanthropic work of great proportions loses its leader. It is said that he has rescued upwards of 55,000 orphan children, most of whom have lived to become useful citizens. Dr. Barnardo was born in 1845, in Ireland, and studied medicine in London, Edinburgh and on the Continent. While still a student, he became interested in destitute children and started a home on his own responsibility. From this beginning the homes have increased to nearly a hundred and are widely scattered throughout England, with several in Canada. It is said that but 3% of the children rescued have gone to the bad. The work will, no doubt, go on under other hands. There are few men who have deserved better of their times than he not only in rescuing children from immediate want, but also in successfully providing work and a definite future for them.

THE WILL OF GEN. ISAAC J. WISTAR. — Through the recent death of Gen. Isaac J. Wistar the Wistar Institute of Anatomy and Biology of the University of Pennsylvania, which he founded, receives the bulk of his estate. A further provision of the will, as given to the public, is as follows:

"I bequeath to the Wistar Institute of Anatomy and Biology my right arm, said to be a desirable specimen of gunshot anchylosis, and also my brain, both to be removed by said institute promptly after my death, and I direct my executor, before performing any other act of administration, to cause the remainder of my body to be cremated with all convenient despatch, without ostentation or unnecessary expense, and to deposit the ashes thereof in an urn or other small vessel of inexpensive character, to be marked and sealed up in the mural crypt or recess prepared for that purpose in the main hall of the said Wistar Institute's museum building."

The amount of the estate is about two million dollars.

THE JOURNAL OF BIOLOGICAL CHEMISTRY. — The first number of *The Journal of Biological Chemistry* will appear in October. It is designed for the publication of original investigations of a chemical nature in the biological sciences, whether concerned with the phenomena of animal or of vegetable life.

Without rigidly defining the scope of the *Journal*, it is stated in the prospectus that its pages will be open, —

1st. To workers in zoölogy and botany and the branches of knowledge in which these sciences are applied, for such of their researches as are of a chemical or physico-chemical nature.

2d. To workers on the chemical side of the experimental medical sciences, as physiology, pathology, pharmacology, hygiene, physiological chemistry and bacteriology.

3d. To those who are engaged in any branch of clinical medicine, when their researches are of a chemical nature.

4th. To the specialist in organic chemistry, who will find here a fitting place for the publication of researches which have biological or medical interest.

The growing importance of chemical research in the elucidation of general biological and medical problems, and also the increasing activity of American investigators in this field, point to the need of a journal of the character here outlined. At present there is no periodical in the English language that meets the requirements of the biological chemist.

The responsible editors are Dr. John J. Abel, of Baltimore, and Dr. C. A. Herter, of New York.

THOMAS YOUNG LECTURER ON MEDICINE. — It is announced that Dr. William Osler has been offered the position of Thomas Young Lecturer on Medicine at St. George's Hospital, which he has accepted. He will give lectures and demonstrations at the hospital, during the spring, on the diagnosis of abdominal tumors.

MEETING OF ASSOCIATION OF MILITARY SURGEONS. — At the recent meeting of the Association of Military Surgeons of the United States, held in Detroit, Mich., it was announced that Major Jefferson Randolph Kean, U. S. A., of Washington, D. C., had received the prize of $500 offered for the best essay on "The Prevention of Disease in the Army and the Best Method of Accomplishing that Result."

YELLOW FEVER. — Yellow fever is under control in New Orleans. The disappearance of the mosquito coincident with colder weather is expected to complete the eradication of the disease. There were 369 deaths in the city up to Sept. 25, with 2,851 cases. In towns and cities outside of New Orleans the disease is persisting and causing some uneasiness to the officials.

ASSOCIATION OF HOSPITAL SUPERINTENDENTS. — The seventh conference of the Association of Hospital Superintendents is being held in Boston this week with headquarters at the Hotel Vendome, under the presidency of Dr. George H. M. Rowe, of the Boston City Hospital. This association, as its name implies, is devoted to the consideration of hospital construction and equipment and allied questions. Its purpose is to bring into closer relations hospital superintendents and those interested in the important problems of hospital administration. The Society is spending four days in Boston, and during that time is listening not only to formal papers, but is also planning to visit the various hospitals in and about Boston. At the opening of the sessions, on Sept. 26, the Rev. Edward Everett Hale, Dr. D. W. Cheever, Dr. H. M. Hurd, Dr. G. H. M. Rowe and Sir Henry C. Burdett of London spoke on topics of general interest connected with the society's work.

SOCIETY OF SOCIAL AND MORAL PROPHYLAXIS. — This recently organized society offers as its program for its meeting to be held Oct. 12, the following questions:

1. Should the youth of the country be educated in a knowledge of sexual physiology and hygiene?

2. What should be the nature and scope of this education?

3. At what age should this instruction be given, and should it be progressive according to the age of the individual?

4. Through what agencies should this instruction be given — through parents, physicians or teachers? Should our educational centers — high schools, colleges and universities — be utilized for this purpose?

5. Should the teaching of sexual physiology be incorporated in our textbooks of Elementary Hygiene?

As the educational feature of the Society's work is an important one, the Executive Committee would be glad to have a general expression of opinion from the medical profession as to the availability and practical value of this proposed education. Physicians who have given serious thought to the subject are invited to send to the Secretary their views upon any or all of the questions submitted for discussion. Such communications will be analyzed and tabulated and form the subject of a report by the Committee on Education. The Secretary is Dr. E. L. Keyes, Jr., 109 East 34th St., New York.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, Sept. 27, 1905, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 22, scarlatina 10, typhoid fever 44, measles 12, tuberculosis 47, smallpox 0.

The death-rate of the reported deaths for the week ending Sept. 27, 1905, was 15.28.

BOSTON MORTALITY STATISTICS. — The total number of deaths reported to the Board of Health for the week ending Saturday, Sept. 23, 1905, is 200, against 216 the corresponding week of last year, showing a decrease of 16 deaths, and making the death-rate for the week 16.60. Of this number 104 were males and 96 were females;

195 were white and 5 colored; 144 were born in the United States, 51 in foreign countries, and 5 unknown; 44 were of American parentage, 138 of foreign parentage, and 18 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 22 cases and 2 deaths; scarlatina, 10 cases and no deaths; typhoid fever, 36 cases and 8 deaths; measles, 14 cases and no deaths; tuberculosis, 44 cases and 18 deaths; smallpox, no cases and no deaths. The deaths from pneumonia were 14, whooping cough 2, heart disease 15, bronchitis 1, and marasmus 7. There were 15 deaths from violent causes. The number of children who died under one year was 58; the number under five years, 74. The number of persons who died over sixty years of age was 44. The deaths in public institutions were 53.

There were no cases nor deaths from cerebro-spinal meningitis during the week.

A NEW HEALTH BOARD FOR WOBURN, MASS. — Mayor Reade has recently appointed a new Board of Health consisting of Drs. A. C. Lane, J. Henry Hutchings and Charles T. O'Brien. This action was rendered necessary by the removal of the previous Board of Health.

TYPHOID FEVER IN MASSACHUSETTS. — Although there is considerable typhoid fever throughout the state, and although in certain localities it has reached the significance of an epidemic, the situation is not regarded as serious. A recent report shows that in fifty Massachusetts towns having a population of more than 10,000 there were nineteen deaths in a week, eight of which occurred in Boston. In New York City there were more deaths than in all Massachusetts. The State Board of Health is keeping in close touch with the districts where the disease has appeared.

RESIGNATION OF DR. GEORGE B. MAGRATH FROM THE LONG ISLAND HOSPITAL. — Dr. George B. Magrath has recently resigned his position as pathologist of the Long Island Hospital, Boston Harbor, in order to accept the assistant secretaryship of the State Board of Health. Dr. Magrath has for a number of years been identified with the Long Island Institution, and it is largely through his energy and untiring interest that the pathological department has been established on a high plane of efficiency. His resignation is a serious loss, although there is no reason to anticipate that the work which he successfully inaugurated will suffer in the future. Dr. S. B. Wolbach of the Harvard Medical School has been appointed in his place, which gives assurance of the continuance and development of the work which Dr. Magrath began.

A MASSACHUSETTS PHYSICIAN AT THE CANAL ZONE. — Dr. Sumner Coolidge, of Watertown, Mass., has gone to the Panama Canal and is at present stationed in the Ancon Hospital. After a month's preliminary training with Dr. Gorgas and other yellow fever experts, he has been put in charge of the reception ward where the white patients are received and observed until it is decided whether the cases are yellow fever or malaria.

NEW YORK.

A CENTENARIAN. — Mrs. Thirza Gray, the oldest woman in that part of the state, died at Oswego, N. Y., on Sept. 21, at the age of one hundred and three years, having been born near Syracuse, on Aug. 29, 1802. She was ill only two days, and is said to have retained all her faculties up to the time of this last illness.

THE HARVEY SOCIETY. — The Harvey Society, described by its constitution as "a society for the diffusion of the knowledge of the medical sciences," offers the following course of lectures which are to be given under the patronage of the New York Academy of Medicine:

Oct. 7, Prof. Hans Meyer, Die Theorie der Narcose (in German). Oct. 14, Prof. Carl von Noorden, Modern Problems of Metabolism. Nov. 4, Prof. F. G. Novy, Trypanosomes. Nov. 18, Dr. P. A. Levene, Autolysis. Jan. 20, Prof. W. H. Park, A Critical Study of Serum Therapy. Jan. 27, Prof. Lewellys F. Barker, The Neurones. Feb. 2, Prof. F. S. Lee, Fatigue. Feb. 9, Prof. L. B. Mendel, The Formation of Uric Acid. Feb. 16, Prof. T. H. Morgan, The Extent and Limitations of the Power to Regenerate in Man and other Vertebrates. Feb. 23, Prof. Charles S. Minot, On the Nature and Cause of Old Age. March 2, Prof. J. C. Webster, Modern Views Regarding Placentation. March 9, Prof. Theobald Smith, Some Phases of Tuberculosis. March 16, Prof. W. H. Howell, The Cause of the Heart Beat.

The lectures will be held in the Academy of Medicine at half past eight on the above dates during the winter. In the Sorbonne at Paris, courses of lectures by distinguished Frenchmen and men of other lands are given with the object of bringing science before those of various pursuits engaged in practice and art. The aim of the Harvey Society is similar in character. The Harvey Society cordially invites all interested to attend this course.

Miscellany.

TREATMENT OF WOUNDED BY THE JAPANESE.

At the annual banquet of the American Association of Obstetricians and Gynecologists, which was held at the Hotel Astor on Sept. 20, Surgeon General Suzuki, of the Imperial Japanese Navy, who has just come from the seat of war, made an address in which he spoke of the treatment of the wounded by the Japanese surgeons. He said that in anticipation of the recent war he made preparations some time before the commencement of hostilities, and in the selection of surgeons he asked for two kinds of men, namely, those who were familiar with the aseptic method of treatment, and those who were known to be conservative. By conservative he meant those who would not too quickly relieve the wounded of arms and legs by amputation. He stated that no carbolic acid or antiseptic was employed; simply sterilized water and sterilized cotton. In most instances no attempt was made to probe the wound for the bullet or fragment of shell. All that was done was to wash the injured parts with the sterilized water and bind them up with the sterilized cotton, and in most instances healing occurred with remarkable facility. On the battlefield no time was taken up in performing hazardous or complicated operations. Dr. Suzuki said that he was personally responsible for the adoption of this method, and in the beginning he was very anxious to learn how it would turn out. The results, however, proved most gratifying, the mortality being remarkably low. Thus, for instance, in one hospital only 32 men were lost out of 680. The surgeons learned that bullets and shells were aseptic. This was well shown in the case of a captain of one of the war ships who was wounded in the calf of the leg. The fragment of shell had penetrated so deeply that it was not easy to get at; accordingly the wound was simply dressed by the aseptic method mentioned, and left alone and it readily healed. Later, when he had more time, he went to a hospital and had the piece of shell cut out, and the operative wound also healed promptly. It was found that it was only when a fragment of cloth was carried into the tissues with the missile that the wound suppurated. Consequently, when a wound was seen not to be healing as it should, it was reopened and the offending material removed, after which there was usually no further trouble. Dr. Suzuki stated that while he knew that all the surgeons present were perfectly familiar with aseptic methods of treatment and used them constantly in their practice, he was glad to be able to report such favorable results from them in military surgery, as the war between Russia and Japan was the first in the history of the world in which they had been extensively applied. Dr. Robert T. Morris acted as toastmaster, and among the speakers were Dr. Lewis S. McMurtry, of Louisville, Ky., and Drs. L. L. Seaman and Hermann J. Boldt, of New York.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, SEPT. 16, 1905.

Cities.	Population.*	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diphtheria and croup.	Typhoid fever.	Cerebro-spinal Menin-gitis.
New York	3,908,644	1,392	480	30.86	8.41	1.77	1.70	1.16
Chicago	1,990,730	514	187	36.80	6.62	1.75	.78	—
Philadelphia	1,467,988	399	138	34.33	6.26	1.00	2.50	.25
St. Louis	635,606	—	—	—	—	—	—	—
Baltimore	543,229	183	70	32.23	2.73	.54	4.92	—
Cleveland	444,251	—	—	—	—	—	—	—
Buffalo	400,645	—	—	—	—	—	—	—
Pittsburg	382,403	—	—	—	—	—	—	—
Cincinnati	364,377	—	—	—	—	—	—	—
Milwaukee	335,990	—	—	—	—	—	—	—
Washington	300,776	—	—	—	—	—	—	—
Providence	196,744	55	19	21.82	14.55	—	3.64	—
Boston	595,598	188	58	31.38	4.79	—	4.25	—
Worcester	127,963	47	10	19.15	8.51	—	4.25	—
Fall River	105,897	36	21	52.78	5.56	—	5.56	—
Cambridge	97,426	17	6	35.29	—	5.88	—	—
Lowell	94,845	31	17	25.81	9.68	—	—	—
Lynn	77,025	19	6	36.84	—	—	5.26	—
New Bedford	74,221	23	6	43.48	—	4.35	4.35	—
Springfield	73,484	13	4	23.08	—	—	7.69	—
Lawrence	69,939	25	11	24.00	4.00	—	—	4.00
Somerville	68,188	15	3	20.00	—	—	—	—
Holyoke	49,124	23	13	17.39	4.35	—	—	—
Brockton	47,782	8	—	37.50	—	—	—	—
Malden	37,990	9	4	11.11	—	—	—	11.11
Haverhill	37,818	7	—	14.29	—	—	—	—
Salem	37,806	9	7	55.56	—	11.11	—	—
Chelsea	37,277	12	8	25.00	8.33	—	8.33	—
Newton	36,994	16	6	31.25	—	—	—	—
Fitchburg	33,017	10	2	10.00	—	—	—	—
Taunton	30,932	16	6	37.50	—	6.25	—	—
Everett	29,108	6	1	16.67	—	16.67	—	—
Quincy	28,067	9	2	33.33	—	—	—	—
Waltham	25,239	4	—	—	—	—	—	—
Gloucester	26,008	—	—	—	—	—	—	—
Pittsfield	25,000	5	—	20.00	20.00	—	—	—
Brookline	23,424	6	1	—	—	—	—	—
North Adams	23,125	7	4	57.14	—	14.29	—	—
Chicopee	20,187	7	3	42.86	—	—	—	—
Northampton	19,943	6	3	—	—	—	—	—
Medford	19,038	7	1	28.57	—	—	14.29	—
Beverly	15,222	3	1	—	—	—	—	—
Newburyport	14,678	3	2	—	—	—	—	—
Hyde Park	14,492	1	—	—	—	—	—	—
Woburn	14,401	8	—	12.50	—	—	12.50	—
Melrose	14,394	0	—	—	—	—	—	—
Leominster	14,290	—	—	—	—	—	—	—
Marlboro	14,072	—	—	—	—	—	—	—
Westfield	13,609	6	3	—	—	—	—	—
Clinton	13,105	5	2	20.00	—	—	20.00	—
Peabody	13,097	—	—	—	—	—	—	—
Attleboro	12,702	—	—	—	—	—	—	—
Revere	12,647	2	—	—	—	—	—	—
Adams	12,483	3	2	33.33	—	—	—	—
Milford	12,105	—	—	—	—	—	—	—
Gardner	11,981	1	0	—	—	—	—	—
Weymouth	11,585	7	2	—	—	—	—	—
Framingham	11,549	—	—	—	—	—	—	—
Watertown	11,202	3	0	—	—	—	—	—
Plymouth	11,118	—	—	—	—	—	—	—
Southbridge	10,947	3	3	33.33	—	—	—	—
Wakefield	—	2	—	50.00	—	—	—	—

*The population given for cities outside of Massachusetts is estimated. Those of Massachusetts are from the Census of 1905.

Deaths reported, 3,075; under five years of age, 1,112; principal infectious diseases (smallpox, measles, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 838; acute lung diseases 203, consumption 351, scarlet fever 6, whooping cough 22, cerebrospinal meningitis 18, smallpox 1, erysipelas 0, puerperal fever 8, measles 7, typhoid fever 66, diarrheal diseases 456, diphtheria and croup 43.

From whooping cough, New York 10, Chicago 5, Philadelphia 4, Baltimore 1, Boston 1, Worcester 1. From scarlet fever, New York 4, Philadelphia 2. From cerebrospinal meningitis, New York 15, Philadelphia 1, Lawrence 1, Malden 1. From smallpox, Chicago 1. From typhoid fever, New York 22, Chicago 4, Philadelphia 10, Baltimore 9, Providence 2, Boston 8, Worcester 2, Fall River 2, Lynn, New Bedford, Springfield, Chelsea, Medford, Woburn and Clinton, 1 each.

In the seventy-six great towns of England and Wales, with an estimated population of 15,609,377, for the week ending Sept. 9, 1905, the death-rate was 16.1. Deaths reported 4,807; acute diseases of the respiratory organs (London) 47, whooping cough 55, diphtheria 30, measles 43, smallpox 0, scarlet fever 32.

The death-rate ranged from 6.7 in Kings Norton to 24.6 in Burnley; London 15.9, West Ham 16.4, Brighton 17.2, Southampton 15.9, Plymouth 16.2, Bristol 12.1, Birmingham 15.8, Leicester 16.7, Nottingham 11.6, Birkenhead 15.3, Liverpool 18.7, Wigan 21.1 Bolton 17.3, Manchester 19.6, Salford 22.3, Halifax 8.2, Bradford 16.0, Leeds 15.3, Hull 15.0, Sheffield 14.4, Newcastle-on-Tyne 17.7, Cardiff 11.0, Rhondda 17.9, Merthyr Tydfil 24.0, Hornsey 9.3, Sunderland 19.8.

METEOROLOGICAL RECORD.

For the week ending Sept. 16, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

DATE	Barometer.	Thermometer.			Relative humidity.			Direction of wind.		Velocity of wind.		We'th'r *		Rainfall in inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A.M.	8.00 P.M.	Daily mean.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	
S. . 10	30.20	67	76	58	70	72	71	N W	S W	2	12	C.	C.	0
M. 11	30.12	68	74	61	77	87	82	S W	S	6	10	F.	O.	T.
T. . 12	29.96	62	64	59	89	100	94	S E	E	20	3	O.	C.	.17
W. 13	29.93	62	73	52	92	71	81	N	N W	10	27	O.	O.	0
T. . 14	30.32	53	61	45	61	51	56	N	N	13	8	C.	C.	0
F. . 15	30.40	52	59	45	71	73	72	N	S E	3	12	O.	F.	0
S. . 16	30.28	59	65	53	72	84	78	S	S W	9	6	O.	O.	T.
Sr	30.17		67	53			76							.17

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. Sr Means for the week.

OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING SEPTEMBER 13, 1905.

BANKS, C. E., surgeon. To proceed to Montgomery, Ala., for special temporary duty. Sept. 9, 1905.

GUITERAS, G. M., surgeon. Granted leave of absence. Sept. 9, 1905.

ROSENAU, M. J., passed assistant surgeon. To proceed to New Orleans, La., for special temporary duty in connection with the investigation of the cause of yellow fever. Sept. 11, 1905.

STANSFIELD, H. A., passed assistant surgeon. Relieved from duty on Isthmus of Panama, effective Aug. 23, 1905. Sept. 7, 1905.

STANSFIELD, H. A., passed assistant surgeon. To report to the Director of the Hygienic Laboratory, Washington, D. C., for duty. Sept. 11, 1905.

TROTTER, F. E., passed assistant surgeon. To rejoin his station, San Francisco, Cal. Sept. 12, 1905.

SWEET, E. A., assistant surgeon. Relieved from duty at New Orleans, La., and directed to proceed to Fort Stanton, N. M., for duty and assignment to quarters. Sept. 11, 1905.

MCMAHON, R. L., acting assistant surgeon. Granted leave of absence for thirty days from Aug. 15, 1905. Sept. 9, 1905.

MARSH, W. H., acting assistant surgeon. Granted leave of absence for twelve days from Sept. 19, 1905. Sept. 7, 1905.

MASON, W. C., acting assistant surgeon. Granted leave of absence for nine days from Sept. 16, 1905. Sept. 7, 1905.

QUIGLEY, F. L., acting assistant surgeon. Granted leave of absence for seven days from Sept. 4, 1905, under paragraph 210 of the regulations.

RODMAN, J. C., acting assistant surgeon. Granted leave of absence for one and one-half days from Sept. 13, 1905. Sept. 13, 1905.

SAFFORD, M. V., acting assistant surgeon. Granted leave of absence for three days from Aug. 29, 1905, under paragraph 210 of the regulations.

SILL, R. H., acting assistant surgeon. Granted leave of absence for seven days from Sept. 30, under paragraph 210 of the regulations.

WALERIUS, M., pharmacist. Granted leave of absence for seven days from Sept. 2, 1905, under paragraph 210 of the regulations.

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING SEPTEMBER 23, 1905.

J. C. THOMPSON, F. C. BENTON, surgeons. Commissioned surgeons, with rank of lieutenant commander, from March 3, 1903.

W. M. CARTON, surgeon. Commissioned surgeon, with rank of lieutenant commander, from March 12, 1903.

F. E. MCCULLOUGH, surgeon. Commissioned surgeon, with rank of lieutenant commander, from June 9, 1903.

F. M. FURLONG, surgeon. Commissioned surgeon, with rank of lieutenant commander, from June 20, 1903.

H. DE VALIN, acting assistant surgeon. Resignation accepted to take effect Sept. 20.

RECENT DEATHS.

DR. FREDERIC A. BALDWIN, of New York, died suddenly on Sept. 21. He was born in New York City, Jan. 7, 1846, and was graduated from Bellevue Hospital Medical College in 1881. For a time he was an attending physician to the Eastern Dispensary and from 1884 to 1895 was in the surgical service of the Out-Door Department of Bellevue Hospital. From 1885 to 1889 he was assistant to the late Dr. Alexander B. Mott, Professor of Clinical Surgery in the Bellevue school. Dr. Baldwin was one of the founders of both the New York State and County Medical Associations.

DR. ROBERT ORMISTON, a prominent physician of Brooklyn, N. Y., died on Sept. 19, at Stamford, in the Catskill Mountains. He was born at Rossie, St. Lawrence County, N. Y., and was seventy-three years of age. He was graduated from the medical department of the University of Pennsylvania in 1858. For thirty years he was an attending physician to the Brooklyn Hospital, and at the time of his death was a consultant to that institution. During the Civil War he served as a surgeon with the Thirteenth Regiment, New York Infantry. Dr. Ormiston was a man of extensive reading, and he collected a library which contained many rare works.

DR. EDWIN ROSS OGDEN died at Orange, N. J., on Sept. 21.

JOSEPH MAURICE SHEAHAN, M.D., M.M.S.S., died in Quincy, Sept. 21, 1905, aged fifty-three years.

JAMES READ CHADWICK, M.D., M.M.S.S., of Boston, died at Chocorua, N. H., Sept. 24, 1905, aged sixty years.

REBECCA BARNARD, M.D., M.M.S.S., died in Worcester, Sept. 9, 1905, aged sixty-eight years.

BOOKS AND PAMPHLETS RECEIVED.

Blood Studies. Third Series. By Edward T. Williams, M.D. Reprint.

A Text-Book of Physiological Chemistry for Students of Medicine. By John H. Long, M.S., Sc.D. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1905.

Dyspepsia Considered as a Brain Disease. A Historical Contribution to the Neuropathic Side of this Subject. By Charles H. Hughes, M.D. Reprint.

Transactions of the Obstetrical Society of London. Vol. XLVII. For the year 1905. Part II, for March, April and May.

Pathology and Morbid Anatomy. By T. Henry Green, M.D., F.R.C.P. Tenth American revised from the tenth English edition. Revised and enlarged by W. Cecil Bosanquet, M.A., M.D., Oxon., F.R.C.P. Lond. Illustrated. Philadelphia and New York: Lea Brothers & Co. 1905.

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Original Articles.

PAPILLOMA OF THE LARYNX IN CHILDREN.*

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THE etiology of this variety of benign tumor, especially in children, is still unknown.[1] If papilloma of the larynx is the result of a microbic infection, the specific bacterium is yet to be discovered. "The respiratory tract being derived from the epiblast, its papillomata are classed with skin warts."[2] But this association does not help us, since dermatologists are equally in the dark regarding the etiology of *verruca vulgaris*. That the laryngeal variety has the same "mild contagiousness"[3] which has been more or less generally accepted of the skin wart of childhood is strongly supported by the frequent appearance of papilloma in a new part of the larynx after operative interference. Indeed, this fact furnishes a strong argument for the expectant treatment to be spoken of later. Diphtheria, measles and other affections, which sometimes appear in the histories of these cases to be associated with their origin, must be looked upon as merely secondary or exciting causes, acting principally, if not solely, by increasing the circulation in the affected parts, but possibly also by lowering the resistance of the organism to infection, if it is a germ disease.

Papilloma may grow from the laryngeal surface of the epiglottis, the aryepiglottic folds, the arytenoids, the ventricular bands, the ventricles, the vocal cords, the interarytenoid space, and from the tracheal wall below the glottis. The rarity of this affection in Europe is shown by Schroetter's and Rosenberg's statistics. The former, among 7,324 children up to ten years of age inclusive, found 10 cases of papilloma while the latter, among 5,808 children up to thirteen years old in the Polyclinic for Throat Diseases in Berlin, found 16 cases. During the years 1889 to 1904 inclusive, there were seen in the Throat Department of the Massachusetts General Hospital, about 12,623 children under fourteen years of age (the number for the year 1904 is estimated). Of this number 12 are recorded as papilloma of the larynx. It would thus appear, as far as these records go, that this affection is even rarer in the United States than in Europe. The symptoms have been so well described in various textbooks that I shall not touch upon them, but pass at once to the consideration of treatment and prognosis, which sides of the subject will repay further consideration. In the first place, as a result of my own experience with these cases and from a study of those reported by others, I wish to lay down as a fundamental proposition that these growths will not yield to any form of treatment which has been attempted, however radical, until the *period of active growth* has passed. Cases of rapid recurrence belong exclusively, as far as I can discover, to childhood when the cell activity of the organism is at its highest. Our ignorance of the etiology and ultimate pathology of these growths leaves us utterly unable to define the extent or significance of this *period*, but our clinical experience assures us of its existence. It is one of my objects in writing this paper to show that the above proposition is fully borne out by practical experience. Although the statement of Bosworth, that "it is probable that the failure to thoroughly extripate the growth is in no small degree responsible for the recurrence when it takes place," is doubtless true of most cases in adults and may be true of some cases in children, still it fails to account for recurrence on a different site or for the fact that of two given cases operated on by the same man with equal thoroughness, one is cured, while the other may show a more active and extensive growth. Nor does this statement explain the frequent recurrences in cases treated by thyrotomy where every portion of the growth can be removed with the utmost thoroughness. Not a few such cases have been reported, but it will, perhaps, be sufficient, for the sake of illustration, to cite without comment the following most striking one of Abbe's.[4] The patient was a girl of thirteen years in whom he did a tracheotomy followed by a laryngofissure and thorough removal of the papilloma. Recurrence took place in two months. He then performed laryngofissure a second time and applied the actual cautery to the site of the growth. Another recurrence in a few months led him to a third laryngotomy and the application of monochloracetic acid to the site of the growth. Another recurrence seemed to call for a fourth laryngotomy and the application of carbolic acid to the site. The trachectomy tube, which had been left in for only brief periods after the previous operations, was now left undisturbed for six years. It had been removed a year before the case was reported and there had been no recurrence. Lindt,[5] Chiari[6] and Summers[7] also report striking cases of this sort. It is not my intention nor does it seem necessary to discuss this method of operating for it is doubtful if one could find to-day a champion of it. Harmer,[8] who is strongly opposed to it, writing in 1903, quotes the views of the writers on this subject. He found that the great majority of them were opposed to laryngotomy. The greater familiarity of operators with the use of Kierstein's autoscope and Killian's tubes has made more remote still the possible necessity of resort to this method in any case. The writer is entirely in accord with G. Hunter Mackenzie,[9] that thyrotomy for papilloma in children is unjustifiable.

What course of treatment shall one pursue in these cases? In drawing conclusions on this point from the literature, one must bear in mind that it is undoubtedly true, as Mackenzie says, that some published results are invalidated by premature publication. Case IV is an example. While quoting Mackenzie I will say that he favors treatment by tracheotomy and noninterference with the growth. He reports 7 cases treated by this method, which were under observation for two years or more. Five completely recovered

* Read at the Twenty-seventh Annual Meeting of the American Laryngological Association, at Atlantic City, June 1, 2 and 3, 1905.

after wearing the tube for from six to fifteen months. One, which had had a previous thyrotomy, disappeared after two and a quarter years, wearing tube, and one very badly nourished child died of independent disease about two years after tracheotomy. Mackenzie is of the opinion that original cases are more rapidly benefited by tracheotomy than those who have undergone thyrotomy or endolaryngeal operations. He cites a number of writers who have reported one or more cases successfully treated by tracheotomy. Many of these had had previous unsuccessful endolaryngeal operations or thyrotomies. He thinks it a safe rule to open the trachea whenever complete permanent aphonia is present, without waiting for dyspnea. The statement that tracheotomized children seldom reach puberty is disproved by the statistics of Jacobi and others. The danger of respiratory affections is not great, according to Mackenzie's experience.

Summers, influenced by a case which had undergone two unsuccessful thyrotomies and was finally cured by wearing a tracheotomy tube for two years, treated two cases by simple tracheotomy with the result that one was cured after wearing a tube sixteen months and the other after five months. In the latter case, however, the diagnosis might be questioned, as the boy was only fifteen months old when tracheotomized and there is no mention of a laryngeal examination. Bruns,[9] whom Summers quotes, records 127 children with papilloma. Forty-eight were not operated on, of which number 32 died, 28 by suffocation. Three were cured spontaneously. Twenty-six cases were tracheotomized, 7 dying after the operation. Of 21 which underwent laryngotomy, only 8 were cured. Forty treated by intralaryngeal methods showed 13 cured. Rosenberg's[10] statistics, which include Bruns,' give 109 cases which had laryngotomy, 52 not over four years of age. Twenty died, mostly from suffocation from recurrence. Recurrences occurred in 43 cases after repeated operations. Forty (36%) were cured, 10 with more or less impaired voice. Eighty-eight cases were treated by intralaryngeal methods, 13 being not over four years old. Three died. Forty (45%) were cured. Sixteen of these, however, are of too recent date to know final outcome.

The writer has collected the following 14 cases from the records of the Massachusetts General Hospital:

CASE I. J. T., male, aged four years, entered the hospital in May, 1873. Had had measles six months before and since then increasing dyspnea. Examination of the larynx (by Dr. F. I. Knight) in March had shown fungous growths on anterior wall of larynx, nearly occluding glottis. Now has bronchitis from which he has suffered for several weeks. Tracheotomy was done on account of dyspnea. The patient died in six days of bronchopneumonia, which was confirmed by autopsy.

CASE II. George E. C. D., male, aged five years, came to the hospital in November, 1888, with the history of "croupy spells," lasting two or three days whenever he caught cold, during the previous three years. Has been hoarse for two years and aphonic for one year. Nine months before admission he had bronchitis for two months. Now has marked dyspnea. A laryngoscopic examination shows large white masses on both vocal cords. Tracheotomy was done on Dec. 3; and on the 12th, Dr. F. H. Hooper operated by means of the laryngoscope and direct sunlight, removing considerable growth with the Mackenzie forceps and Hooper laryngeal curette, the patient being under ether. On Dec. 14, the tube was removed after having been corked for twenty-four hours and the patient was discharged on the 16th breathing well. He could speak in a loud whisper. The subsequent history of this case is not known. A letter sent to the address given at the time was returned unclaimed. This case has been already reported.

CASE III. Bertha M., aged seven years, was admitted to the hospital on Jan. 28, 1889. Her general health was good. She began to be hoarse a year ago. Hoarseness has gradually increased. There has been no dyspnea. Laryngoscopic examination shows a papilloma, especially on the left side, arising from the vocal cord and parts above. On Feb. 2, with the patient under ether and without a previous tracheotomy, Dr. Hooper attempted to remove the growth, but failed on account of the persistence of the pharyngeal reflexes. The patient was discharged to return again in ten days. There is no further record of the case and a letter sent to the address given at that time was returned.

CASE IV. Earl K., aged two years, was admitted to the wards on May 14, 1889. He is a strong and healthy boy. His voice began to be husky three or four months ago. He grew gradually worse until two months ago when he lost his voice entirely. The respiration has also been labored and difficult for two months. Tracheotomy was done on the 15th. While recovering from tracheotomy he had an attack of measles and on recovering from this affection he was ill for over two months with bronchopneumonia. He continued to wear the tracheotomy tube and nothing was done for a year and a half. In December, 1890, he was readmitted. An examination under ether by Dr. Hooper showed a grayish-white mass nearly filling the glottis below the vocal cords, probably attached to the anterior well of the larynx. On Jan. 15, 1891, under ether, several pieces, from the size of a pin's head to a pea, were removed with the curette. Two days later, as he was found to breathe well with a cork in the tube, the latter was removed. On Jan. 20, the opening in the neck had healed, he breathed naturally and his voice could be heard across the ward. He remained in the hospital until Feb. 23, and was discharged in excellent condition. This much of the case has already been reported.[11] On Dec. 18, 1894, the child was again admitted. He was small and poorly developed, and was breathing with great difficulty. On the 20th, tracheotomy was done, under ether, with considerable difficulty, owing to the poor condition of the patient and the scar of the previous operation. A regular tracheotomy tube could not be introduced, but a piece of catheter was put in, stitched to a piece of plaster which was fastened to the neck. The patient was restless through the night. He had three attacks of cough and dyspnea. The tissues about the neck and down on the chest to axillæ and over to scapulæ and up on to both cheeks were emphysematous and distended. During third coughing attack, he coughed the catheter partly out. Before it could be reintroduced, he ceased to breathe. Artificial respiration was of no avail and the patient died. A post-mortem examination of the larynx showed just above the ventricular bands a rounded papilloma, size of a pea, which from its situation and size must have almost completely closed the glottis. Just beneath the true cords was a similar growth of much smaller size and more sessile.

CASE V. Albert D., aged five years, entered the hospital Nov. 9, 1892. He is a well-developed and nourished boy. Since he was three months old his voice has been little better than a whisper. Examination shows a papilloma on the left side of the larynx anteriorly, apparently sessile. On Nov. 11, with the patient under ether, Dr. Clark removed a small amount of the growth with Schroetter tube forceps. On the next day the patient coughed up a small piece and on the 17th another small piece was removed under ether anesthesia. On the 19th he was discharged to report later. He was not seen again but in answer to a letter the following report from his mother was received in January, 1905: "Albert is now a big, strong boy of fifteen and has never, since the operation, had the least trouble with his throat, not even when he has had a cold."

CASE VI. Russell F., aged three years, entered the hospital June 22, 1898. He has been troubled for about a year with hoarseness and gradual loss of voice with occasional attacks of choking and dyspnea of a croupy character. He speaks only in a faint whisper. Physical examination shows a very well-developed and well-nourished boy, apparently in excellent health. In the larynx is a papilloma involving the right vocal cord and the base of the epiglottis. On the morning of the operation the child was given 1-200 gr. of atropia by the mouth and was then transferred to another ward. Here the dose was repeated, the house-officer not knowing that it had already been given, so that he had in all 1-100 gr. of atropia. The operation, under ether, was performed by Dr. Clark. The patient was held upright in a nurse's lap, a mouth gag was inserted and the tongue drawn forward. A portion of the growth was removed by laryngeal forceps. The patient took ether apparently well and, although the throat was dry and free from saliva owing to the atropia, a good view of the larynx could not be obtained owing to the persistence of the throat reflexes. The child was carefully watched through the operation and the pulse was taken from time to time. Suddenly the child was noticed not to be breathing so well and soon stopped altogether. Tracheotomy was performed at once, artificial respiration, oxygen and electricity tried and the child worked over for an hour, but in vain. There was considerable frothy mucus discharged through the tracheotomy tube, which suggested edema of the lungs. There was no autopsy and the question still remains as to the exact cause of death; whether there was an edema brought on by the fact that the boy did not get sufficient air into the lungs through the partially obstructed larynx and whether the atropia had anything to do with death. In the latter case the patient must have been unusually susceptible to the drug, for the dose while large should not have been a dangerous one even for a child of three, especially as it was given in divided doses at an interval of fully an hour.

CASE VII. William F., age five years, entered the hospital June 20, 1897. Family history is negative. Began to be hoarse after whooping cough a year ago. Breathing became noisy soon after and has continued so ever since. This spring the boy has had attacks of dyspnea at night. They usually come on after he has been asleep for a short time, starting with a fit of coughing. At times cyanosis has been great. Physical examination shows a well-developed and nourished boy. Heart and lungs are negative. The whole larynx is filled with a papillomatous mass whose origin cannot be made out. Several attempts at removal without ether were unsuccessful. He was kept under observation for a week and discharged untreated. He was readmitted to the hospital in December, 1901. Breathing has been slowly becoming more difficult. Has had occasional attacks of dyspnea at night, but does not become cyanotic. Is now poorly nourished. Tracheotomy was done under chloroform, from which there was an uneventful recovery. Some growth was removed by Dr. Coolidge under ether on Jan. 10, and on the 27th, ether was again given and in the Rose position the growth was partially removed with a snare and curette through the Kierstein's autoscope. Bleeding was inconsiderable. On Feb. 4 and 8, more growth was removed in the same manner. On the 11th of February the tracheotomy tube was removed and on the 14th the wound was closed except for superficial granulation tissue. The patient was discharged to the out-patient department. Here the records show that in November, 1903, a small papilloma was seen on the right cord anteriorly and that in five visits during March, April, May and June, a few small pieces were removed with laryngeal forceps using head and throat mirrors. Also in December a piece was removed in the same manner. In January, 1905, and in March, also, a small piece was removed with the Mackenzie forceps.

CASE VIII. James J., age eleven years, was admitted to the hospital in April, 1898. He began to be hoarse three years ago and has been growing rapidly worse for the past six months. He coughs and breathes with difficulty, especially at night. He is aphonic. A papillomatous mass grows from the laryngeal surface of the epiglottis and from the ventricular bands, concealing the vocal cords. Several pieces were removed, without ether, by means of the Hooper curette at a number of sittings and the patient was discharged on April 23, breathing well. From that date until December 14, he was treated as an out-patient, having pieces of the papilloma removed from time to time, showing its rapid growth. On the date last mentioned, while a piece of the growth was being removed, the boy became cyanosed and could breathe only with the greatest difficulty, probably the result of a sudden congestion of the larynx. Tracheotomy was done under cocaine anesthesia, from which recovery was uneventful. Portions of the papilloma were removed from time to time until April 6, 1899, when he was discharged to report to the out-patient department. There is no further record of this case and a letter sent in May, 1905, to the address given was returned unclaimed.

CASE IX. Everett E. L., age six years, was admitted Feb. 8, 1901. The boy was always well until a year ago when he had grippe. Since then he has been growing more and more hoarse and for the past few months has been aphonic. Five days ago he began to have dyspnea. He is well nourished and developed. Heart and lungs are normal. Inspiration is very labored, expiration unimpeded. There is no cyanosis. Tracheotomy was done, from which the recovery was uneventful. On the 15th, the tonsils, which were very large, were removed under ether anesthesia and several days later a large papilloma was removed with the Hooper curette. On March 13, the boy was discharged wearing the tube, although he could breathe well with the tube closed. He was readmitted in October. The larynx below the arytenoids was filled with the warty growth and a piece the size of a bean was removed by Dr. F. C. Cobb with the curette under ether anesthesia. He had a slight bronchitis after the operation, from which he quickly recovered, and on Nov. 5, another piece of the growth was removed in the same manner and he was discharged on the 11th. While at home he coughed up two or three pieces through the tube. He was readmitted in February, 1902, when an examination showed the larynx apparently clear above the cords but a growth below the glottis and also in the trachea above the tracheotomy wound. On Feb. 21, the patient was again discharged, the growth being so extensive and recurring so rapidly that it seemed

best to leave it entirely alone for a time. This policy has been pursued ever since, the patient reporting at periods of three to six months for observation. At first he coughed up pieces of papilloma from time to time, but for the past year he has not coughed up any. During this time his health has greatly improved and he has had no illness. He goes regularly to school and is up with boys of his own age. When seen last (in October, 1904), he could breathe perfectly with a cork in the tube and spoke clearly. There was a small growth below the glottis apparently growing from the anterior tracheal wall. If this is still present when I see him again this summer and has not apparently increased in size I shall probbly remove it. If it has disappeared I shall, of course, remove the tracheotomy tube.

CASE X. George W., age nine years, was admitted to the hospital in August, 1904, with a history of gradually increasing hoarseness for six months and marked dyspnea on exertion for two weeks. A large papilloma was seen attached to the anterior part of the right cord and the anterior commissure and causing considerable obstruction. Repeated attempts to remove the growth under cocaine failed, and Dr. D. Crosby Greene, who was on service at the time, did tracheotomy, from which the child made a good recovery, and was discharged in a few days from the hospital. He was readmitted the latter part of September when I operated on him by means of the Kierstein autoscope and Nernst lamp, removing some of the growth with a small pair of straight alligator forceps. It was impossible to obtain a complete view of the larynx owing to the difficulty of sufficiently depressing the tongue. Another similar operation was done in February, 1905, at which time the larynx appeared more filled than ever with the papilloma. At a more recent examination the growth was found as large as ever, showing great activity and it was decided to let it entirely alone, the patient continuing to wear the tube.

CASE XI. Ethel S., age two and a half years, was admitted March 2, 1903. General health is good. Her voice began to be husky a year and a half ago. This has gradually increased until the voice is entirely gone. During the past month there has been gradually increasing dyspnea, worse at night and when lying down. The child is well developed and nourished. The heart and lungs are normal. She speaks only in a whisper. The breathing is noisy and harsh and evidently somewhat difficult. There is no cyanosis. On March 4, tracheotomy was done. On the 5th, the temperature was 105°, pulse 150, of poor quality, and respiration 50. The child coughed a purulent material out of the tube, there were râles over both lungs and later signs of consolidation. The child died early in the morning of the 6th, of pneumonia.

CASE XII. Florence K., age three years, was admitted June 13, 1904. She had always been well, but has never been able to use her voice. Whenever she takes cold she has severe choking spells and difficulty in breathing and often gets black in the face. A laryngeal examination under ether three days before entrance showed papilloma growing from both sides of the larynx and causing considerable obstruction. Cyanosis is marked at times. Tracheotomy was done from which the recovery was uneventful and the child was discharged in a week. The following entries occur on the out-patient record: Aug. 24. Cough with considerable discharge from tube, otherwise well. Sept. 2. Sonorous and musical râles through chest. No dullness. Sept. 12. Still has cough and considerable discharge. Sept. 17. Mother reports child is very ill. Readmitted. Sept. 19. Larger tube inserted. Sept. 22. Left ear discharging, large perforation. She was etherized on the 27th, and operated on in the same manner as Case X. An excellent view of the larynx could be obtained and almost all the papillomatous mass was removed from the ventricular bands to which it was attached. Sept. 30. Discharged. Nov. 16. Coughing considerable. Inner tube cleansed. Nov. 25. Discharge of muco-pus from tube is profuse. She had a "bad spell" since last visit and a doctor was called in to clean tube. Dec. 2. Tube was removed to clean and child became blue in a short time showing marked laryngeal obstruction. Jan. 11, 1905. Tube removed and numerous small fragments of papilloma removed through the tracheotomy wound. Breathing was much embarrassed while tube was out. About a month after the last visit we learned that the child had died at her home of bronchopneumonia. She was one of a large family of children of very poor parents and showed marked evidences of neglect whenever she was brought to the clinic and her general condition improved rapidly both times she was admitted to the hospital. It seems fair to say that if her home surroundings had been better she probably would not have died as she did.

CASE XIII. Nellie S., age six years, entered the hospital July 5, 1904. Her family history and previous history were good. Her voice is hoarse and at times entirely lost. She has severe choking attacks whenever she has a cold. The patient is a well-developed and nourished child. Examination shows a large cauliflower-like growth completely hiding the glottis. Tracheotomy was performed from which recovery was uneventful. She wore the tube without symptoms until Sept. 26, when she was readmitted and operated on under ether in the same manner as Cases X and XII. The growth was very large, covering the whole laryngeal surface of the epiglottis and completely concealing the glottis. A splendid view of the growth was obtained and almost all of it was removed. In the course of the operation the child suddenly stopped breathing entirely once so that artificial respiration had to be resorted to. An examination under ether on the 30th showed the larynx well cleared of growth except a little on the laryngeal surface of the epiglottis. She was discharged on Oct. 1, wearing the tube. The following notes occur in the out-patient record: Dec. 14. Papilloma growing from posterior surface of epiglottis, region of left ventricle and interarytenoid space. Feb. 9, 1905. Considerable increase of papilloma on interarytenoid space and vocal cords and some through fenestrum of tube. At more recent examinations, besides the growth in the larynx which has remained undiminished, there is a papilloma which hangs down over the tracheotomy wound when the tube is removed. The child was etherized at this time with the view of a second operation, but in view of the great activity of the growth it was decided to leave it entirely alone for the present. The child gets along with perfect comfort with the tube.

CASE XIV. Jennie M., age two years, was admitted Aug. 10, 1904, on account of gradually increasing hoarseness and dyspnea for six months. Her voice is now entirely gone and dyspnea on exertion has been marked for the past month. Two months before entrance she had her tonsils and adenoid removed. Her health in general has been good. A laryngeal examination showed the glottis almost filled with papillomatous growth, both ventricular band and the base of the epiglottis being the sites of the vegetations. On the 11th, Dr. Greene did tracheotomy under ether anesthesia and on the 17th he removed a small portion of the growth, also under ether, with Mackenzie forceps. The patient was discharged on the 19th. She was admitted again in October and operated on under ether, by Dr. Coolidge. The child was put in the Rose position, the autoscope introduced and then a Killian tube into the upper part of the larynx and the growth removed piecemeal with forceps, under direct vision.

The larynx was then curetted with gauze on an applicator and left apparently free from papilloma. The child was discharged still wearing the tube on the 11th. A note on the out-patient record, Feb. 3, 1905, says, "Papilloma present on both sides of the larynx." In this case, also, the growth has recurred so rapidly that non-interference for the present seems to be indicated.

Of these 14 cases, 9 were boys and 5 were girls. Age: One case, according to the parents, dated from birth. In another case the symptoms began at the age of three months. Five other cases were two years old or under when they first showed evidence of laryngeal trouble. Of the remainder, one was three years old, one four, two five, one six and two eight years old when the first symptoms appeared. The time elapsing between the appearance of the first symptoms and application for treatment varied from four months to four years and nine months. In the majority this period was from one to three years. In one case, the symptoms began to appear after an attack of measles, in one after whooping-cough and in one after grippe.

Treatment without previous tracheotomy was attempted in 4 cases. One of these died under the operation, one was lost sight of, one was successful and one, after several successful operations, required tracheotomy for a sudden attack of dyspnea during an operation. Preliminary tracheotomy was done on the 10 remaining cases. Of these latter 4 died; 3 of bronchopneumonia, and one of suffocation after a difficult second tracheotomy. One of those dying of bronchopneumonia had bronchitis at the time of the operation, which was necessitated on account of severe dyspnea and one died so long after tracheotomy (eight months) that death cannot be directly attributed to that operation. Case IV, which died of suffocation after a very difficult second tracheotomy necessitated by the recurrence of the growth, illustrates the importance of not removing the tube until there is no vestige of papilloma or until the child is old enough to be treated as an adult. Cases IX, X, XIII and XIV are incomplete and a further report will be made on them at some future time.

Treatment. — The two methods employed for seeing the papilloma were the indirect (laryngeal mirror) and the direct (Kierstein's autoscope or Killian's tubes). The instruments used in the former case were Mackenzie's forceps, Schroetter forceps and Hooper curette. In the latter case, small alligator forceps and curette were used. It is important before operating to spray the larynx with a 1% cocaine solution to prevent, if possible, reflex inhibition of respiration. This occurred during the operation in Case XIII, necessitating artificial respiration. As a result of his own experience and a review of the reported experience of others, the writer will, in the future, employ for these cases the treatment by tracheotomy and absolute noninterference with the growth. For although Case V and possibly Case II, which was not heard from after leaving the hospital, recovered after one or two removals of the growth, in the rest of the cases, where operative interference was resorted to, the growth returned with increased activity. Besides, it is quite possible that Case V in which the indications for operation were not urgent, there being no dyspnea, might have recovered without operation. But in view of the fact that it is impossible to tell in a given case how attempts at removal will affect the papilloma and in view of the fact that in the large majority of cases such attempts affect it unfavorably, the best procedure seems to be to follow Mackenzie's rule to open the trachea in every case whenever complete permanent aphonia is present.

Children can, apparently, wear a tracheotomy tube with comfort and without interference with the health for years (see Case IX) if necessary. It is possible that a given case will not yield to simple tracheotomy. Dundas Grant[1] reports such a case: a girl who had had tracheotomy performed for papilloma at the age of four months and at the age of twenty-two years was still wearing a tube and had a larynx almost filled with multiple growths. These growths were removed at one sitting and never recurred. This result of treatment in an adult agrees entirely with the writer's experience in cases already reported[12] and in others which he has seen since. If, when the tracheotomized child reaches an age when such growths begin to lose their activity, the papilloma is still present, then endolaryngeal removal may be tried by one of the methods described above or, without a general anesthetic, by means of laryngeal mirrors and some form of laryngeal forceps or snare as in the adult. At what age this treatment should be begun varies with each case, but it seems safe to say that it could not be attempted with any hope of success before the age of ten years.

Summary. — Papilloma of the larynx in children is a very serious condition, the cause of which is unknown. The best method of treatment in all cases is tracheotomy and noninterference with the growth. If, under this treatment, it still persists after an age when the child can betreated as an adult, it has probably lost its activity of reproduction and attempts at its removal may be made.

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[13] J. P. Clark: BOSTON MEDICAL AND SURGICAL JOURNAL, May 25, 1893.

MUSCLE TRANSFERENCE, WITH THE REPORT OF TWO CASES OF TRANSFERENCE OF A BRANCH OF THE TRAPEZIUS TO A PARALYZED DELTOID.

BY E. H. BRADFORD, M.D., BOSTON.

EVERY new surgical procedure of value passes through certain stages of development. It is warmly advocated by enthusiasts, welcomed

with a certain amount of praise and, passing through a stage of criticism and doubt, it reaches an established position among surgical procedures, later to be modified and developed. This has been shown in the present condition in the general surgical acceptance of tendon grafting and tendon transference which is meeting with criticism, owing to the over-enthusiasm of the early advocates and to the subsequent relapse in many cases which were at first considered definitely cured. The value of the method is proved, however, as many cases in the practice of various surgeons have been improved and a considerable number practically cured of their disability by this method when carefully applied. While unsatisfactory results necessarily follow the injudicious and hasty application of the method to unsuitable cases, many modifications and improvements in the method have been introduced until tendon transplantation has not only become more firmly established, but is much more generally applicable than was formerly supposed to be the case. The original method has been broadened so as to include not only the original tendon grafting but also muscle insertion, muscle transference, muscle shortening, tendon shortening, the lengthening of tendons, the transplantation and periosteal insertion of tendons and the employment of muscular power of the strong muscles by means of lengthening the transferred tendon by the aid of strong silk cords. The exact limitation of this latter method is still a subject of discussion, and if not supported by substantial facts would be rejected as a surgical extravagance, but indisputable clinical facts warrant the proper use of this valuable addition to surgical procedure which we owe to the efforts of Lange. That silk suture can be made to serve as a tendon mechanically, and also be the basis of the organization of new, strong, fibrous tissue, thus creating a new tendon, would seem a flight of surgical fancy if facts were not offered in proof of the truth of the assertion.

A few illustrative cases will serve to indicate that the method has a wide field of usefulness, not only for the specialist but for the general surgeon also, whose knowledge of practical anatomy is united to an interest in this class of cases.

TRANSPLANTATION OF THE TRAPEZIUS INTO THE DELTOID.

CASE I. A healthy boy of eight, with deltoid paralysis of the left arm of several years' duration. Other muscles of the arm were active though not strong from limited use; marked atrophy of the whole limb was present, but no shortening. A portion of the trapezius was detached from its insertion on the scapula, freed and inserted into the fibrous fascia of the deltoid, the portion of the trapezius transferred being one-half inch in width; strong catgut sutures were used. The arm was fixed at right angles to the trunk and supported by plaster of Paris fixation, holding the arm, hand and trunk, which was worn for six weeks. The condition three years later was ability to raise the humerus and bring it forward, the arm having gained nearly its normal function.

CASE II. L. Paralysis of the deltoid with dislocation of the humerus on to the median nerve. Consequent paralysis of the hand and forearm. A transference of the trapezius to the detached fibers of the deltoid was made, the insertion being somewhat to the front. The capsule of the shoulder joint was found relaxed, permitting a constant dislocation inward of



FIG. 1. Photograph of a case of muscle transference of a branch of the trapezius into the deltoid for deltoid paralysis. Photograph taken three years after operation showing the restored ability to raise the arm.

the head of the humerus and an apparent pressure paralysis of the median nerve. A reef was therefore taken in the capsule. A portion of the pectoralis minor was dissected from its attachment on the chest, leaving the attachment to the coracoid process, and was inserted into the biceps. The result one and one-half years later was a restored functional power in moving the arm forward and outward, with recovery of power in the motions of the hand and forearm.

CASE III. Insertion of the sartorius into the patella. This operation was performed on a boy of eight with extensive infantile paralysis involving the back, the trunk, the right limb and both feet. The sartorius was transferred and inserted into the tendon of the quadriceps extensor on the left side and in both feet. The perineus brevis was inserted in the tibialis anticus tendon. Sufficient power had been gained ten years afterwards to enable the patient to walk without apparatus, to kick with the paralyzed limb and to walk without toe drop. Motions at the ankle joint were, however, not normal and a valgus of both feet remained.

CASE IV. Tendon shortening of the flexor communis tendons of the right ankle, lengthening of the tendo Achillis. Periosteal insertion of the perineus brevis to the inner side of the foot in the right with the result of functional activity in the place of the paralyzed muscle and cure of the valgus deformity was performed with success in a boy of eight, suffering from infantile paralysis for three years.

CASE V. Insertion of the biceps to the side of the patella with excellent functional result persisting two years after the operation was performed on an adult,

thirty years of age, who had been paralyzed for three years. Tendon shortening of the communis digitorum prevented toe drop with the result of a useful limb enabling the patient to kick with considerable force and to walk without cane or support. The result was a permanent improvement having persisted two years after operation.

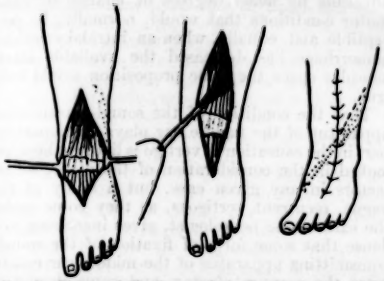


FIG. 2. Diagram indicating method of subperiosteal tendon transference of the peroneus brevis to the inner side of the foot to relieve tibial paralysis.

CASE VI. Transference of half of the tendo Achillis forward with subperiosteal insertion with one foot on the inner side and the other on the outer side of the tarsus, was performed in a girl of fifteen with both feet deformed from old infantile paralysis. The result five years later was complete restoration of use of the left foot and absence of toe drop but with slight varus, not requiring a support or entailing limp or disfigurement in the right foot.

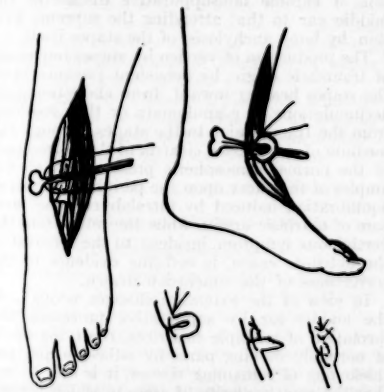


FIG. 3. Diagram of method of shortening a relaxed muscle and tendon.

In so wide a field of surgical endeavor as this now offered by this new procedure so much depends upon the skill of the individual operator that it is difficult to classify success. Certain principles, however, which must be borne in mind by every surgeon, can be mentioned as follows: First, it is necessary that the muscle which is to be cut should not be left in a relaxed condition. Second, if a strong muscle is inserted into a weak muscle it is essential not only that the insertion should be strong, but that the tendon into which the insertion is made should not be so disorganized by paralysis as to become stretched when subjected to use. Third, that the transferred muscle should be attached in such a way that its contraction can be functionally effective and that it should be inserted into such a point as will render its contractions efficient. It is the disregard of these points which has led to much discouragement on the part of operators.

VERTIGO OF AURAL CAUSATION.*

BY CLARENCE JOHN BLAKE, M.D., BOSTON.

A CONSIDERATION of the participation of the ear in the causation of the symptom vertigo is based upon the main proposition that in one end of each of the three semicircular canals there is a terminal nerve-ending apparatus exceedingly sensitive to the influence of pressure, in a given direction, exerted upon it through the medium of the fluid by which it is surrounded; that the incompressible fluid fills the labyrinth, is capable of transmitting minimum, rhythmic impulses up to a duration limit of one ninety-thousandth of a second, or higher, and also of executing gross movements sufficient to actuate the terminal nerve-ending apparatus of the semicircular canals, these two forms of transmission being capable of operating coincidentally, but independently of of each other, and serving the purposes of the organ of hearing and the organ of equilibration respectively.

That the labyrinthine capsule has firm, bony walls and that its cavity is filled with an incompressible fluid presupposes some exceptions to this resistant encapsulation if the contained fluid is to be a medium for the transmission of motion, and these exceptions are provided in the outlets furnished by the aqueduct of the cochlea and of the vestibule and by the membranes closing the opening of the oval and round window; the former being supported, from without, by a bony superstructure, the stapes, with a muscular check attachment and the latter by the normal atmospheric pressure in the tympanic cavity.

Under conditions which decrease the capacity of the aqueduct outlets, or impair the mobility of the membranes of the two windows the ability of the intralabyrinthine fluid to transmit minimum vibration movements may be interfered with and the hearing power temporarily abrogated, the terminal nerve-ending apparatus of the semicircular canal becoming, however, under these conditions, actuable by a lesser degree of movement than would be the case in the normal state.

Of the pathologic changes occurring in the aqueducts we have only inferential knowledge except in the comparatively infrequent instances in which an autopsy concludes the clinical observation of a given case, but the two windows are within inspection and the changes occurring in

* Read at a meeting of the Boston Society for Medical Improvement, Jan. 16, 1905.

their membranes, and about them, are either readily observable, or deducible, in the course of clinical study.

A constantly recurring source of excess of intralabyrinthine pressure for which the aqueducts and the mobile membranes of the windows, in their normal condition, furnish a compensation, is the blood supply to the membranous labyrinth, under vasomotor inhibitory control.

If, therefore, the nerve-ending apparatus of the semicircular canals is to be regarded as a pressure perceptor in a given direction, it is understandable that increase of static pressure, from whatever cause, will render the end apparatus more amenable to the influence of a lesser degree of pressure from a given direction and that the sensation of change of position in space, or vertigo, will be more readily induceable.

Since, under normal conditions, the blood pressure in the labyrinth is constantly changing and the aqueducts and the membranes of the windows serving as means of compensation at the other end of the balance, it is evident that either a lack in compensation, or an excess of blood pressure, beyond the limit of normal compensatory provision, would bring about conditions favorable to the production of vertiginous symptoms.

As a result of clinical observation it not infrequently happens that both of these conditions pertain simultaneously and that the most severe attacks of recurrent vertigo are the result of some form of middle ear fixation coupled with suspense of vasomotor inhibition.

For purposes of clinical observation the factors in the causation of the symptom vertigo, of aural origin, may be classified as extrinsic, those which operate outside the labyrinth, in the middle ear for instance, and those which occur within the labyrinth itself, the former including changes diminishing the compensatory function, or even inducing intralabyrinthine pressure, and the latter including such pressure conditions as would result from intralabyrinthine hemorrhage or from suspense of vasomotor inhibition.

Any extreme fixation of the sound-transmitting apparatus of the middle ear, such as occurs in the later stages of a slowly progressive, nonsuppurative, chronic middle ear disease, an anchylosis of the malleo-incudal articulation, a stapes fixation by exostosis, and extreme relaxation of the drum-head with excessive intratympanic muscular contraction, or the pressure upon the stapes or membrane of the round window incident to accumulations, or new growths, in the tympanum, would illustrate the form of the extrinsic causation; while the conditions pertaining in the so-called Ménières disease, and the transitory vertigoes of the neurotics and neurasthenics, would be examples of the latter or intrinsic causation; it being, of course, understood that the two classes are not infrequently combined and that no case in which vertigo is a symptom can be regarded as having been thoroughly investigated without taking the aural condition into consideration; for, while the varying degrees of vasomotor inhibition, up to the point of vessel rupture and intralabyrinthine hemorrhage, are compensatorily provided for by the mobility of the transmitting apparatus of the middle ear, when this mobility is impaired the end apparatus of the semicircular canal becomes affectible by lesser degrees of change in vasomotor conditions that would, normally, be perceptible and, equally, when an intralabyrinthine hemorrhage has decreased the available intracapsular space the same proposition would hold true.

That the condition of the sound-transmitting apparatus of the middle ear plays an important part in the causation of vertigo is liable to be overlooked in the consideration of the other, reflex, factors in any given case, but a study of the vague, recurrent vertigoes, as they come under the care of the neurologist, gives increasing evidence that some form of fixation of the sound-transmitting apparatus of the middle ear constitutes the constant factor, and some degree of suspense of vasomotor inhibition the variable factor in the majority of them.

Given a fixation of the stapes, either individually, or through the medium of the other members of the ossicular chain, a portion of this compensatory provision against intralabyrinthine pressure resulting from a suspense of vasomotor inhibition, is lost, this loss varying in its extent with the degree of stapes fixation, from that pertaining in the simple general immobilization of chronic nonsuppurative disease of the middle ear to that attending the supreme fixation, by bony anchylosis, of the stapes itself.

The production of vertigo by stapes impaction of traumatic origin, by persistent pressure upon the stapes bearing inward, from cholestomatous accumulations or granulomata or that resulting from the transmission to the stapes, through the medium of a depressed cicatrix of the drum-head, of the normal atmospheric pressure, are all examples of the effect upon the peripheral organ of equilibration induced by intralabyrinthine pressure of extrinsic origin, while the relief from the vertiginous symptom, incident to the removal of the extrinsic cause, is sufficing evidence of the correctness of the conclusion drawn.

In view of the extensive changes wrought in the middle ear by suppurative processes, the formation of multiple cicatrices, the tying down of normally moving parts by adhesion and the thickening of remaining tissues, it is safe to say that the great majority of cases in which vertigo is a prominent symptom, and especially the recurrent vertigoes of sudden onset, should be viewed from the otological as well as the neurological standpoint.

In these cases of recurrent vertigo, seen sometimes in otherwise strong and well ordered individuals, both the observations set forth in the literature of the subject and daily experience show, in the great majority, a pathologic condition of the ear, ranging from a simple middle ear fixation to the consequences of a past intralabyrinthine hemorrhage constituting a persistent

intralabyrinthine pressure to which the end apparatus of the semicircular canals has become gradually accustomed, being stimulated to further abnormal activity only by the additional pressure incident to intralabyrinthine suspense of vasomotor inhibition of reflex origin, a familiar type of these cases being that in which the vertiginous attacks are the sequence of cumulative over-tire or emotional fatigue or the effect of undue use of stimulants or depressants and in which there is found, upon examination and hearing test, some distinctly causative, more or less persistent, abnormal, aural condition.

In reviewing the subject of the aural causation of vertigo it may be briefly said:

1. That in view of the existing knowledge of normal conditions in the semicircular canals, vertigo, of aural causation, may be regarded, primarily, as a pressure symptom.

2. That pressure may be exerted upon the labyrinth by forces operating from without as the result of changes in the middle ear transmitting apparatus.

3. That it may be produced from within by invasion of the intracapsular space, as in the case of hemorrhage into the labyrinth.

4. That the effect, upon the semicircular canals, of intralabyrinthine pressure thus produced will depend, as to its intensity and duration, upon the locality and extent of the hemorrhagic invasion.

5. That the recurrent vertigoes are the result either of an excessive intralabyrinthine vessel dilatation, from suspense of vasomotor inhibition of reflex origin, either alone, or coupled with a persistent intralabyrinthine pressure, of either extrinsic or intrinsic origin.

Under these conditions it is plain that a minute study of aural pathologic changes, as bearing upon the causation of vertigo, affords an interesting field for further otological observation.

THE MÉNIÈRE SYMPTOM COMPLEX.*

BY WALTER A. LECOMPTE, M.D., BOSTON.

BY a series of careful experiments on pigeons and rabbits, Flourens in 1824 laid the foundations of the present conception of the function of the internal ear. He insisted on the division of the internal ear into two distinct sensory end-organs, — the cochlea, the end organ of hearing, and the semicircular canals and vestibule for the perception of movements of the head and body, a static organ which plays an important part in the orientation and equilibration of the body in space. Flourens' conclusion that the direction of the movements of the head and body following cutting of the semicircular canals corresponds to the three dimensions of space, for example, that cutting of the horizontal semicircular canal causes movements from right to left and from left to right, that is, in a horizontal plane, is now accepted. But in what manner this coincidence of a movement in one of the three dimensions with a severing of a particular semicircular canal is brought about cannot be considered a settled question. That, however, the semicircular canals and vestibule are a static organ, that disease of this part of the internal ear may give rise to disturbances of equilibrium, is for us, from a clinical standpoint, of great significance.

Ménière, in 1861, was practically the first to adapt this teaching of Flourens to the conception of disease of the ear. He reported a series of eleven cases from the study of which he concluded that: "An auditory apparatus, previously quite healthy, can suddenly become the seat of functional trouble consisting of variable subjective noises, continuous or intermittent, and soon followed by a more or less pronounced decrease in hearing; . . . that these functional troubles can give rise to vertigo, uncertain gait or even dizziness so severe that the individual falls to the ground; that, moreover, they are accompanied by nausea, vomiting and a state of syncope; and that everything points to the belief that the material lesion is in the semicircular canals." Only one of the eleven cases, on the consideration of which Ménière came to the above conclusions, was examined post-mortem. This case was a young girl, who, chilled by a cold ride on a winter's night at the time of her menstruation, was seized suddenly with vertigo, vomiting and total deafness, and died in five days. The autopsy showed no cause for death, but, whereas the central nervous system showed no lesion, in the vestibule and semicircular canals there was a red plastic mass, evidently a hemorrhagic exudate. Since Ménière's time there have been found similar post-mortem pathological conditions, but these are mostly cases of leucemia, and of late it has been suggested that in all probability the cases reported by the older writers and Ménière's autopsied case were really cases of leucemia. Upon the basis of these observations of Ménière the conception arose that the symptoms described by him, *viz.*, a sudden onset of vertigo, subjective noises and deafness, were the expression of a particular diseased condition. This triad of symptoms is, however, known to be caused by a variety of ear diseases, diseases of the external and middle ears as well as of the internal ear. For example, impacted cerumen, poylp formation in the middle ear, retention of pus in the middle ear, adhesive processes in the middle ear, or spongification of the labyrinth capsule with stapes fixation. But even leaving out these external and middle ear affections, and Ménière distinctly states that the diseased condition described by him occurred in ears presenting normal appearances, the number of internal ear affections which may be accompanied with the above triad of symptoms is very considerable. We have mentioned the hemorrhages of leucemia and we may add pernicious anemia and syphilis, and, perhaps the most frequent, inflammation of the labyrinth most usually arising from extension of purulent processes in the middle ear. Then there is a not inconsiderable number of cases where the cause

*Read at a meeting of the Boston Society for Medical Improvement, Jan. 16, 1905.

is unknown and ascribed to vasomotor disturbances in the blood vessels of the labyrinth. Inasmuch as these symptoms are the result of so many diverse diseased conditions, it seems proper, in the interest of exactness, to consider them simply as Ménière's symptom complex and to discard the term "Ménière's disease" from the systematization of ear diseases.

I wish to report two cases which I have seen recently which presented the Ménière symptom complex more or less completely.

The first was that of a man forty-one years old, a very strenuous business man who gave the following history: Aside from measles and whooping cough in childhood and frequent mild attacks of grip for the last four or five winters he had always been well and strong. Two months ago, he awoke at 3 A.M., and felt very dizzy and nauseated (no vomiting). He started for bathroom and fell upon the floor, but did not lose consciousness. The nausea lasted about two hours and he had severe ringing and roaring in both ears. Closing the eyes relieved dizziness. He had been working hard all the day before and went without his dinner at noon, eating, however, a hearty supper at 8 P.M., the evening before his attack. Ten days later he had an attack similar to the first, but more severe, and he vomited several times a greenish yellow vomitus. The attack came on at the same time as the previous one, 3 A.M., and lasted three hours. Ringing noises were worse in left ear and the attack was followed by slight deafness as was the previous one. For about five weeks the patient had no further trouble, then one afternoon at five o'clock, while dictating a letter in his office, he suddenly became dizzy and the subjective noises began in the ears. Vertigo increased and he became nauseated, vomiting three or four times. No loss of consciousness. Attack lasted one and one-half hours. He had been working hard all day. He had had a light breakfast, and dinner at 1 P.M. and had been up at night for the last three nights attending some of his family who were sick. Physical examination at the close of the attack showed a well-developed and well-nourished man. Mind clear. He was very pale, cold all over and his body was bathed in slight perspiration. Pupils were equal and reacted to light normally. Throat was negative. Tongue was moist and had a white coating. A few small glands were noted in neck, axilla and groin. Heart impulse was palpable in fifth space inside nipple line, dullness corresponding. Action regular, sounds of fair quality, no murmurs. Pulses were equal and synchronous and of fair volume and tension. Lungs normal; abdomen full and soft; spleen not enlarged. Reflexes present and normal. External genitals normal. No edema. Eyes showed no refractive error.

Blood examination showed Hgb. 85% and whites 11,000. Urine normal. The hearing was only slightly decreased. No finer test was made of the hearing at this time, but several months afterwards I was able to examine the ears and found the drum membranes slightly retracted, otherwise normal in appearance. The whispered voice was heard in both ears fifteen feet distant. Rinné positive. Weber not lateralized. High and low limits normal. Gellé negative. The patient complained at this time of slight subjective noises. Inflation of the middle ear relieved the subjective noises and brought the hearing to normal, showing that at the present time the slight ear trouble was simply due to interference with the middle ear ventilation. I consider this case one where by exclusion we can safely say that the seat of the trouble was in the semicircular canals and that the fact that the hearing was not affected, except in a very slight degree, shows that the cochlea was not involved.

My second case is that of a woman who, nineteen years ago, a few weeks after giving birth to a child,—there was erysipelas following the birth of the child,—was seized with an attack of dizziness with nausea and vomiting, roaring subjective noises in the left ear, and complete left-sided deafness. The dizziness persisted in a slight degree for several months and the subjective noises for the same length of time. At present, the examination of the ears shows the right normal in appearance and function, the left ear hears the conversational voice at the distance of one foot, a very high-grade deafness. The Rinné is negative. The high limit is Galton 5. and the low limit 256 d. v. Gellé negative. Weber lateralized toward the good ear.

In this second case the functional test shows that in all probability there was, together with the involvement of the static labyrinth, an involvement of the cochlea. The second case also illustrates what is usually the rule; that, in these cases of internal ear disease showing the Ménière symptom-complex, the vertigo and subjective noises disappear, but the deafness persists. As to the cause in these cases we are quite in the dark. In both, however, we can see possible etiological factors; in the first, the irregular, high-pressure manner of life, in the second, the exhausted condition of a septic puerperium; and I suggest that here we have to do with vasomotor disturbances in the blood vessels of the labyrinth, possibly with slight hemorrhages from these vessels.

UNUNITED FRACTURE OF THE HUMERUS TREATED BY THE BOLT METHOD — FAILURE OF UNION — SUBSEQUENT SUCCESSFUL WIRING.

BY HAROLD W. JONES, M.D., ST. LOUIS, MO.,
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THE publication by Watts[1] in 1904, of a case of ununited fracture of the shaft of the femur, which was successfully treated and bony union secured by using a silver bolt to hold the fragments in apposition, led me to adopt the same method in a case of ununited fracture of the humerus. Although failure of union occurred which rendered subsequent wiring necessary, I believe that a record of the case with a consideration of causes of failure is of sufficient importance to warrant publication.



Mortise Joint in the Humerus. Bolt in situ. (Diag.) Cross section.

J. D. M., a physician, fifty years of age, in March, 1904, was severely injured in a street car accident, owing to a collision between two cars. He sustained a fracture of the left humerus at the middle of the shaft,

[1] Watts: The Silver Bolt as a Means of fixing Ununited Fractures of Certain Long Bones. Johns Hopkins Hospital Bulletin, April, 1904.

besides severe lacerations of the forearm and hand, including the division of several of the extensors of the fingers, which were not sutured at the time. The arm was immobilized as well as could have been expected, perhaps, although the great weight of the patient and his obesity made fixation of the fragments somewhat difficult. Sixteen weeks after the accident I saw the patient for the first time. Examination showed no union whatever and the skiagraph revealed wide separation of the fragments and considerable overriding. Operation was at once suggested but the patient, desiring to try complete fixation in plaster for several weeks before submitting to operation, consulted another surgeon. His arm was confined in plaster for six weeks, at the end of which time no attempt at union had resulted and he returned to me for operation, which was performed under ethyl chloride and ether anesthesia. On exposing the fractured ends, they were found separated about one inch, the fracture being slightly oblique; a very slight amount of callus had formed about the fractured ends. The periosteum with the muscles was pushed back from the ends for a distance of an inch and a half, and a mortise joint was formed as described by Watts and shown in the illustration, leaving about an inch for each flange of the mortise. A steel bolt previously cut to the exact length required by measurement on the skeleton, was then inserted through holes drilled in the flanges, its head being external. Since the nut had to be applied internally and had a considerable depth, it was secured in place with some difficulty, being finally screwed to the bolt by holding it in artery forceps, the bolt being carefully turned meanwhile. The periosteum and muscles were then stitched, the wound washed out and closed except at its lower part. The mortise had been fitted so accurately that in lifting the arm to apply the dressings, there was no appreciable movement between the fragments. An especially made internal angular splint and an outside coaptation splint were applied, the whole being covered by a modified Velpeau bandage. The patient was up on the third day and suffered no pain, his temperature during the first week never exceeding 99.2°. At the end of a week the dressings were removed and the arm carefully examined. The skin wound was open at its lower part, but there was no evidence of infection. Motion, however, was distinctly demonstrable between the fragments, which gave rise to suspicion that the bolt was not holding them together. At the end of four weeks the external wound had healed, but a softened area appeared at the inner aspect of the arm; this was opened and a slight amount of pus escaped. At the end of five weeks, an enormous callus had developed but union was not at all firm. At twelve weeks all hope for bony union was given up; an x-ray at that time showed separation of the fragments. The patient was told the result frankly and another operation was advised. At the second operation, the incision was made through the old scar, the ends of the bones located an inch or more apart, and the bolt removed from the lower fragment. No corrosion of the bolt was observed since it was hardly blackened and the nut unscrewed readily. The upper fragment was then examined carefully and it was found that the bolt had evidently worn its way through the flange of bone in the mortise. There was considerable evidence of bony repair although not as much as was expected. Another mortise was not attempted, since it would have involved too much shortening and possibly too great a gap between the bone ends to overcome with safety. The fragments were simply trimmed until the marrow bled freely, holes were drilled about half to three quarters of an inch from each end of the two fragments and the latter were brought together by two strands of heavy silver wire. The wound was then drained with rubber tubes and partially closed. The arm was immobilized with coaptation splints and a plaster covering the shoulder and extending down the arm posteriorly, so as to cover the elbow, a window being cut for the purpose of dressing the wound. The wound closed completely within a few weeks, but the dressings were not removed for ten weeks. At that time some union was evident. The arm gradually became more and more solid and at the end of fourteen weeks a leather shoulder cap and arm support was applied. At the end of twenty weeks all dressings and supports were discarded, the fracture being perfectly firm although the callus was slightly sensitive. At the present time, twenty-four weeks after operation, there is a somewhat noticeable shortening of the humerus, but no deformity. Motion in the elbow, both active and passive, is possible to just beyond the right angle, while there is slightly restricted mobility of the shoulder and a little muscular atrophy. The x-ray shows excellent apposition of the fractured ends.

The causes of failure in operations of this character are, of course, numerous; refracture, necrosis, infection, failure of callous formation, are, any one of them, sufficient. I believe in this case, however, failure of union was due to the very thing which at first sight seemed to assure success, *i. e.*, the tightness of the mortise joint. "Tension and pressure are surgical sins," is true enough, and carpentry upon the human frame, to be effective, must eliminate these dangerous factors. The continued pressure of the bolt upon the bone finally wore through it and a refracture resulted, or else the refracture occurred directly after the operation, since the tighter the mortise, the greater would be the strain thrown upon it by any movement of the humerus. In a person the size of the patient reported (he weighed 270 pounds) absolute immobilization of the humerus is difficult or impossible, since even the movements of respiration are to some extent transmitted to the upper arm. The realization of this difficulty of immobilization was my reason for using the bolt, but, with my present knowledge, would be a reason for not using one. It has been said that silver is the least offensive foreign body that can be left in the tissues, but I doubt if in this case a silver bolt would have been more effective than a steel one. A great many surgeons, including myself, have repeatedly put steel nails and the like into bone and allowed them to remain there indefinitely without evidence of irritation, so I can hardly believe that the metal used was responsible for failure in the present instance. In the second operation, it was recognized that since the humerus could not be absolutely immobilized, a slight amount of motion had best be allowed between the fragments, thereby eliminating the tension which must have inevitably followed the use of a tight mortise, either with the use of a bolt or with silver wire. It was sufficient to know that the ends were in apposition and that there was no risk of their pulling apart from the breaking of the wire.

I do not necessarily advocate the abolition of the mortise joint as unsurgical, but I do believe that if union occurs under such unfavorable con-

ditions as were present at the second operation in this case, by simply apposing the bone ends, that much time and labor is wasted by carefully mortising bones together, especially as the latter proceeding is open to two risks, — breaking of the wires during application of the dressings and subsequent necrosis from pressure or tension. My experience with the bolt method is limited to this particular case, but I believe its employment is undesirable, since failure must occur in many cases for the reasons already considered.

Reports of Societies.

AMERICAN GYNECOLOGICAL SOCIETY.

THIRTIETH ANNUAL MEETING, HELD AT NIAGARA FALLS, MAY 25, 26 AND 27, 1905, UNDER THE PRESIDENCY OF DR. EMILIUS C. DUDLEY, OF CHICAGO.

THE Society held its sessions at the Cataract House. An address of welcome was delivered by DR. CARL G. LEO-WOLF, of Niagara Falls, which was appropriately responded to by DR. ELY VAN DE WARKER, of Syracuse.

ACCIDENTAL RUPTURE OF THE NONPARTURIENT UTERUS, WITH REPORT OF CASES.

DR. GEORGE W. JARMAN, of New York, had seen five cases of accidental rupture of the nonparturient uterus. These were detailed. To draw some deductions from his own cases and those reported by others, it seemed to the author, (1) that the operation of invading the cavity of the uterus should not be regarded lightly, and that the same care in the details of asepsis should be carried out as in a laparotomy; (2) that great care should be used in the introduction of steel dilators, and at no time forcing them into the cavity of the uterus; (3) that as one's experience in gynecology increased, the use of the uterine sound decreased, and the fingers more and more frequently took the place of the curette to remove secundines from the uterus; (4) that sterile water was the best fluid for irrigating the uterine cavity; (5) that if a rupture or perforation of the uterine wall occurred, it was better to perform a laparotomy and assure one's self of the safety of the patient than to hope that no untoward results would ensue; (6) that if one could not be certain of the asepsis of the curettage, it was better to use a small drain through the vagina, and a slightly elevated posture of the patient, than to regret its non-use after the development of septic peritonitis; (7) that in properly conducted cases observed soon after the accident there should be almost no mortality.

DR. A. PALMER DUDLEY, of New York, had perforated the uterus four times. In one case, after introducing the instrument into the uterus, he withdrew what he supposed was a fungous growth or secundines, but which proved to be eight inches of the small intestine. The intestine was passed back through the opening made in the uterus, and the patient let alone. She had since borne two children.

DR. HERMON J. BOLDT, of New York, said it was not always that a perforation of the uterus caused serious trouble. Great discrimination should be used in those cases in which there was danger. In all instances of criminal abortion where there was any suspicion that infection had taken place, the abdomen should invariably be opened. He had perforated the uterus a number of times, and had seen it perforated by others. In other instances of perforation of the uterus, the physician should do nothing except perhaps insert a small piece of gauze through the cervix, let the patient alone, and he believed the majority of cases would recover.

DR. EUGENE BOISE, of Grand Rapids, Mich., reported two cases of perforation of the uterus, one of which occurred in 1871. The physician in attendance passed a sound clear up to the handle. Nothing was done, and the patient developed no symptoms. In the other case the uterus was perforated with a curette; the cavity was thoroughly washed out, the patient put to bed, without anything further being done, and she made an uninterrupted recovery.

DR. FERNAND HENROTIN, of Chicago, had seen five cases in which the uterus was perforated. One was accidental. One was the result of the work of an abortionist, and on opening the abdomen, the patient being septic nine days after the supposed operation, he found a bougie nine inches long in the abdominal cavity. The patient recovered after undergoing a severe trial.

DR. ANDREW F. CURRIER, of New York, agreed with the previous speakers that in many of the cases in which perforation of the uterus had occurred no damage would result if the intestine had not been withdrawn. If there was a mere puncture of the uterus, if the woman was not septic, it was safe to leave her alone and do just as little manipulation as possible. But supposing the uterus was in a soft, friable condition, one was presented with the alternative of either closing the perforation or of removing the uterus. In many cases the removal of the uterus was preferable, and more than likely would result in more benefit to the patient than the mere closure of the hole. The key to successful treatment was complete drainage, and if there was already a condition of sepsis in the uterus, and one simply closed the wound, he was by no means sure that the sepsis would not continue. Therefore, in cases of that kind it would be prudent to remove the uterus, leaving the wound in the vagina open, and establishing free drainage.

DR. A. LAPTHORN SMITH, of Montreal, did not think it was the curette which was responsible in most cases for perforation of the uterus. He confessed to having perforated the uterus about six or eight times. He had no fear of the result if the parts were thoroughly aseptic.

DR. CLEMENT CLEVELAND, of New York, had perforated the uterus with a sharp curette on one occasion when he was talking to his class about the carefulness with which the instrument should be used. The patient was to be operated upon for a lacerated cervix and lacerated perineum. He postponed this operation, put the patient to bed, and no bad results followed.

The Society should exercise its influence toward eliminating the sharp curette from the bag of the general practitioner, or else it should be relegated to the junk heap. It was fraught with the greatest harm to future women if it was used in the careless way it was to-day.

DR. WILLIAM E. MOSELEY, of Baltimore, said both the dull and sharp curettes had their place. Personally, he first introduced the dull instrument for diagnostic purposes, and then the question as to whether the dull or sharp curette should be used depended upon the character of the tissues one had to deal with. There were some cases in which there was more danger of perforation of the uterus from the use of the dull than from the sharp curette.

DR. WILLIAM H. WATHEN, of Louisville, did not think the dull curette had any place in the surgery of an experienced gynecologist. The man who could not use a sharp curette without injuring his patient had better refer his cases to someone who could. Occasionally, he admitted, cases were reported where the

uterus had been perforated by experienced operators. Curettage should be done by the sharp curette, or decidual remains should be removed by the finger, if possible.

DR. ELY VAN DE WARKER, of Syracuse, N. Y., stated that uterine curettement was attended with more or less danger, and should be confined to the hands of good gynecologists, and rarely ever or never done by the general practitioner.

DR. SETH C. GORDON, of Portland, Me., said occasionally he had pushed a sound through the uterus, but by leaving the patient alone he had not seen any harm result.

DR. PHILANDER A. HARRIS, of Paterson, N. J., had perforated the uterus twice, once through the corpus posteriorly and once anteriorly. The perforation posteriorly was done by the curette, and the one anteriorly by his dilator. With his present dilator there was a device attached to it which registered the exact number of pounds exerted by the operator in dilating the cervix.

DR. T. A. REAMY, of Cincinnati, Ohio, had perforated the uterus with a sharp curette within the past two years. He curetted a woman a short time ago, whose condition was such that his consultant was in doubt as to whether there was cancer of the body or the result of a chronic endometritis. The speaker in curetting the uterus rather thoroughly perforated it. A pelvic abscess resulted from the perforation, which was opened, and the patient made a good recovery.

DR. EMILIUS C. DUDLEY, of Chicago, stated that within five weeks he perforated a uterus with a curette. The uterine wall was not more than the thirty-second of an inch thick, due to a localized pathological condition. A considerable quantity of bloody fluid was found in the cul de sac of Douglas, which was sponged out, the abdominal cavity flushed out with salt solution, and after closing the wound in the uterus with a pursestring suture, the abdominal wound was closed, and the patient made a good recovery.

THE TREATMENT OF RETROVERSION OF THE UTERUS BY SHORTENING THE UTEROSACRAL LIGAMENTS.

DR. ARTHUR W. JOHNSTONE, of Cincinnati, stated that the first step in either retroversion or prolapse was due to a stretching of the uterosacral ligaments. This was proven by clinical experiences and a study of the comparative anatomy of the subject. This stretching was most commonly due to a low grade of infection spreading to these ligaments from the uterus or other contiguous structures, that made them lose their tone. A few cases were due to direct violence. The operation consisted in shortening the uterosacral ligaments through the vaginal incision. The uterus was replaced and prolapse cured. Shock was *nil*, and convalescence smooth.

A NEW PLAN OF PROCEDURE IN RETRO-UTERINE DISPLACEMENT.

DR. E. E. MONTGOMERY, of Philadelphia, stated that retrodisplacements of the uterus more frequently demanded restoration to normal position than any other form of displacement. Nature's forces should be imitated as far as possible in relieving malpositions. The Alexander operation and its modifications were in this line of procedure. Its usefulness was limited to the uncomplicated and mobile uteri in which operative interference was least demanded. The majority of the intra-abdominal operations on the round ligament employed the best part of the ligament in their manipulation and left unaffected its weakest portion. The various operations of ventrofixation and ventrosuspension were departures from the normal, placed the uterus in abnormal relation and rendered painful and difficult the performance of its normal functions. The vaginal procedures required considerable dissection, were ineffective in restoring normal relations, and were to that degree to be condemned. The operative procedure, he would suggest, was a combination of operative procedures employed by Gilliam, Ferguson and Simpson. It permitted of treatment of diseased ovaries and tubes, left the uterus a freely movable organ, supported it by normal elastic and muscular structure capable of undergoing evolution and involution, and, finally, afforded no opportunity for the formation of unfortunate adhesions.

ARTERIOSCLEROSIS OF THE UTERUS AS A FACTOR IN UTERINE HEMORRHAGE.

DR. PALMER FINDLEY, of Chicago, read a paper on this subject, in which he gave a résumé of all cases, and reported four new ones. The writer dealt exclusively with the so-called essential or idiopathic hemorrhages, the cause of which was not definitely determined. He argued that arteriosclerosis of the uterus was not the prime factor in bringing about these obscure hemorrhages. In his opinion muscular insufficiency was the underlying cause, and the sclerosed vessels were but contributing factors. He drew the following conclusions:

1. Metritis, as a primary lesion and independent of infection, is not accorded the consideration which the frequency of its occurrence and its clinical significance would warrant. 2. The muscular fibers of the uterine wall have an important function in controlling the caliber of the blood vessels, and hence in regulating the blood supply to the uterus, as evidenced in the relaxed condition of the uterine wall during menstruation, in post-abortion, and post-partum hemorrhages, and in the free bleeding which accompanies curettage when the uterus has relaxed under the irritable influence of the curette. In all these conditions the hemorrhages are controlled by the contractions of the uterus. 3. Any event which lowers the muscular tone of the uterus may occasion an abnormal loss of blood into the endometrium and uterine cavity. 4. Prominent among the factors which contribute to muscular atony in the uterus are the wasting diseases, anemias and acute febrile diseases, which are not infrequently accompanied and followed by uterine hemorrhages as the result of weakened support to the vesical walls. 5. Fibrosis uteri is a far more common cause of muscular insufficiency. The building up of connective tissue in the uterine wall at the expense of the muscular elements is the result of long-continued passive congestion, which in turn is due to numerous general and local lesions, such as an incompetent heart, obstructions in the lungs, liver, kidney and spleen, abdominal swellings, varicose veins of the pelvis, and uterine displacements. 6. The walls of the blood vessels share in these hyperplastic changes, in that the media and adventitious coats of the vessels are thickened. In this manner the elasticity of the vessel walls is impaired, and if the lumen of the vessels is not narrowed by contraction of the vessel walls, and thickening of the intima, there will be added reasons for various engorgements of the uterine wall and capillary oozing at the endometrium. In such cases the prime factor in the causation of uterine hemorrhages is the muscular incompetency; the thickened vessel walls and the remote embarrassments to the circulation are but contributory factors. 7. This condition of the vessel walls is to be distinguished from the arterio-obliterans of the normal senile uterus, in which the vessels are partially or wholly obliterated by the thickened intima. In such cases hemorrhages do not occur, for the reason that the blood supply is greatly diminished. 8. In none of the recorded cases were hemorrhages seen to come from ruptured blood vessels, nor were aneurysms

of the arteries seen in the uterine wall. On the contrary, the escaped blood was farthest removed from the sclerosed vessels and were evidently capillary. We are, therefore, not justified in ascribing the hemorrhages directly to the sclerosed vessels. 9. The diagnosis can only be made by first excluding all other possible causes, such as polyps, carcinoma and fibroids. 10. Hysterectomy has been frequently resorted to after repeated curettements have failed. Palliative methods — rest, ergot, styptic applications to the bleeding surface, and finally tamponading the uterine cavity — may be resorted to, but have repeatedly failed.

POST-OPERATIVE VOMITING.

DR. EUGENE BOISE, of Grand Rapids, Mich., said it was assumed as proved that there was a vomiting center from which all impulses toward vomiting were sent. These impulses might be received through various channels. The conditions that led to post-operative vomiting were numerous. They might be grouped as (1) those conditions pertaining to the anesthetic; (2) those pertaining to the general condition and surroundings of the patient; and (3) those pertaining to the stomach. The anesthetic caused vomiting (1) by its direct irritant action on the vomiting center; (2) by causing a toxemia and (3) by saturating the secretions of the stomach.

The conditions pertaining to the stomach were (1) chronic, such as atony, dilatation, chronic disease of the mucous membrane, etc.; (2) acute, as saturation of the tissues and secretions of the stomach by the anesthetic.

Treatment must, therefore, be preventive as well as curative, involving greater care in the preparation of the patient. Four things must be kept in mind: (1) The abnormal irritability of the vomiting center; (2) the condition of the stomach; (3) the condition of the blood and (4) the condition of elimination.

Treatment must be adapted to the conditions found. Theoretically, the indications were to obtund the sensitiveness of the vomiting center; to neutralize, if possible, the irritant character of the anesthetic, to cleanse and soothe the stomach; to keep the patient quiet in order to avoid circulatory disturbances; to aid elimination and to support the patient and nourish the irritated nerve centers by rectal feeding when indicated.

DR. A. LAPTHORN SMITH emphasized the necessity and importance of preliminary preparation of patients. Careful attention should be given to diet, to getting the bowels thoroughly cleaned out, so as to reduce the amount of vomiting after operation to a minimum. He advocated the drinking of large quantities of hot water by patients to wash out the ether that had been swallowed during its administration. Hot water taken in this way amounted to the same thing as gastric lavage.

DR. MATTHEW D. MANN did not believe the character of the anesthetic had as much to do with the vomiting as the amount of the anesthetic. The more deeply a patient was anesthetized, the greater the amount of anesthetic used and the longer time it took the patient to get rid of it, the more the vomiting center was irritated. For three years he had been using ether, preceding it by chloride of ethyl. He had done an operation, lasting forty-five minutes, with two or three ounces of ether, when preceded by chloride of ethyl. Since following this method, vomiting had been greatly reduced, and in many instances the patients had not vomited at all.

DR. A. PALMER DUDLEY said that if operators considered the preparatory measures mentioned by Dr. Mann, there would be less reflex action on the part of the stomach in postoperative work.

DR. ANDREW F. CURRIER thought the preliminary administration of chloride of ethyl, or nitrous oxide, as had been his custom recently, was much more satisfactory than the prolonged and irritating effects which came from the first stage of anesthesia through the administration of ether alone. One could lay down as a principle that given a very careful administration of the anesthetic and a small quantity, one would have much less trouble afterwards from vomiting.

DR. C. C. FREDERICK agreed with Dr. Mann as to the preliminary use of chloride of ethyl, followed by ether or chloroform. For a year and a half or more, he had begun anesthesia with chloride of ethyl, getting the patient under its influence rapidly, then changing to ether or chloroform. Vomiting was much less by this combination.

DR. ARTHUR W. JOHNSTONE attributed the great decrease in the amount of vomiting after operations largely to careful preliminary preparation of his patients.

DR. DANIEL H. CRAIG, of Boston, did not consider eserin in any sense a specific against postoperative vomiting, but he thought it had the same effect on cases of postoperative vomiting, but he thought it had the same effect on cases of postoperative vomiting as gastric lavage, whether resorted to before the patient left the table or later. The effect of small doses of calomel given before operation, or divided doses of it after operation, was the stimulation of normal peristaltic action. With lavage the stomach was emptied. Eserin had no effect on the motility of the stomach itself, but it did in re-establishing or preventing stoppage of intestinal peristalsis. Eserin did the work far more efficiently and effectively than divided doses of calomel which necessitated giving the patient medicine by the mouth at a time when she was nauseated and unprepared to take it.

DR. MALCOLM MCLEAN, of New York, said one should give as little of the anesthetic as possible. Anesthetics should be given by men who were skilled in this work. By giving a preliminary anesthetic, such as chloride of ethyl or nitrous oxide, the preparation was such that when ether or chloroform was given, large toxic doses of it were not carried through the circulation so as to poison the patient in the postoperative stage.

DR. GEORGE GELLHORN, of St. Louis, stated that for about a year he had employed as a preliminary the hypodermic injection of scopolamin-morphine, about an hour before operation. This combination arrested secretions from the mucous membrane of the mouth and throat. He gave scopolamin and morphine in the proportions of $\frac{1}{150}$ gr. to $\frac{1}{4}$ gr. of morphine. The effect was that the mouth and throat were absolutely dry and remained so during the operation, and the amount of ether used was materially minimized.

DR. REUBEN PETERSON said his experience had been different from that of Dr. Gellhorn in the use of morphine and atropine. He had used this combination for years, giving about $\frac{1}{4}$ gr. of morphine and $\frac{1}{150}$ gr. of atropine, about three quarters of an hour before the anesthetic was given. Before he used these drugs, there used to be excessive secretion; there was gurgling, so that the mouth and throat had to be swabbed out; but since their use this had almost entirely ceased. He had not attributed the absence of vomiting to the use of these drugs entirely, but to thorough preliminary preparation of the patient, and to better methods of administering chloroform and ether.

DR. EDWARD P. DAVIS said that the remarks made concerned patients with whom there had been abundant time for preparation. One was obliged sometimes to operate upon emergency cases, as ruptured ectopic gestation. In these postoperative vomiting might

be very depressing and dangerous. What could be done to prevent it? While the patient was on the table, and before the operation was quite completed, intravenous saline transfusion or injection would prevent postoperative vomiting as well as prevent shock.

DR. FERNAND HENROTIN said that one of the most important factors in the reduction of vomiting as well as in the reduction of shock and of making a patient's recovery reasonably smooth, was washing out the stomach. For a little over a year he had been resorting to quick anesthesia with nitrous oxide preparatory to the administration of ether, using as little of the anesthetic as possible, immediately washing out the stomach thoroughly after every operation, and giving a hypodermic injection of asserin before the patient was taken off the table. The use of this combination had made an immense difference in the results of his general operative work.

DR. J. WESLEY BOVEE thought the proper procedure was to prepare patients as well as the conditions would permit, and do it with proper discrimination. Then came the proper administration of the anesthetic, giving as little as possible of it, and steadily, not irregularly. After the administration of the anesthetic he had found the administration of oxygen for fifteen to twenty minutes to be the most satisfactory of anything he had used. He objected to the use of morphia because there were so many cases of renal complication in which the use of this drug would handicap the operator.

SYMPOSIUM ON THE RELATION OF THE APPENDIX TO PELVIC DISEASE OR TO PREGNANCY.

THE RELATION OF THE APPENDIX TO PELVIC DISEASE.

DR. REUBEN PETERSON, of Ann Arbor, Mich., read a paper on this subject in which he presented the following conclusions based upon the clinical and microscopic study of 85 appendices removed during the course of operations for pelvic disease: 1. In the first series of 200 cases, reported last year by him, a little over 50% of the appendices were found microscopically to be normal. In the present series, 49.3%, or practically 50%, were found normal. The same microscopic classification was adopted as last year: namely, (1) negative; (2) chronic inflammation; (3) doubtful significance; (4) former inflammation; (5) acute inflammation, and (6) peri-appendicular inflammation. The only change in the classification was that groups 1 and 3 were practically united, and with the exception of two cases were placed in the negative group. This was a minor detail of classification, however, as in each series the appendices in both groups were considered normal. 2. In both series practically one half of the removed appendices were microscopically normal, while the remainder showed evidences of acute or chronic inflammation, or the results of former inflammation. 3. The average length of 79 appendices was 9.99 cm. In the first series the average length was 8.25 cm. 4. The appendix was found adherent in 20 out of the 85 cases, or in 23.4%. This was 5% higher than in the last year's series. But both series show that the appendix was adherent twice as frequently in those cases where microscopic examination showed past or present disease. A certain proportion of adherent appendices were, however, perfectly normal microscopically. 5. Abnormalities in shape were noted in 27 out of 85 cases. The appendices were found to be club-shaped, constricted or bent upon themselves in 10 of the 27 cases, yet microscopically such appendices were normal. Hence the same conclusions arrived at last year held good for the present series. Mere shape of the appendix cannot serve as an index of its normality or disease. Appendices may be club-shaped, constricted or bent upon themselves, and yet be perfectly normal. 6. There were fecal concretions noted in 14 out of the 85 cases. This gave a percentage of 16.4, and was double that noted last year. This might be explained by the more accurate observations made in the present series of cases. It did not take into consideration microscopic concretions, but only the palpable forms. In 7 or one half the cases, the appendices with fecal concretions were normal, hence, as noted in the first series, their existence did not denote disease. 7. Exactly 50% of the 34 patients in the present series with chronic disease of the appendages showed accompanying disease of the appendix. 8. The following conclusion would hold good for both series: In chronic disease of the appendages, adhesions of the accompanying appendices are present in nearly 50% (47%, second series) of the cases where microscopic examination shows the latter to be diseased. In a certain proportion of cases, however, although the appendix may be adherent, it is also perfectly normal. 9. Of the 17 normal appendices accompanying chronic disease of the appendages, 9 were noted as changed in shape, or contained fecal concretions; hence in chronic disease of the appendages, the appendix, which is club-shaped, constricted or contains fecal concretions, is not necessarily diseased. 10. There were 21 cases of uterine fibromata among the 85 patients. Of these, 48% had accompanying disease or evidence of former disease of the appendix. The percentage was in the first series practically the same. 11. There were eight cases of large ovarian cystomata in the second series. Of these, 50% had accompanying disease of the appendix, 20% less than in the first series."

INFLAMMATORY CONDITIONS OF THE APPENDIX ACCIDENTALLY BROUGHT TO LIGHT IN PELVIC OPERATIONS.

DR. HUNTER ROBB, of Cleveland, Ohio, stated in a paper on this subject, that of 370 appendices removed and examined microscopically, 103 were normal; 46 showed signs of a chronic, and one of an acute, appendicitis. In 88 cases there was an hypertrophy of the subperitoneal or internal coat, or of both coats. In 66 cases the changes were of doubtful significance; in 36 the lumen was occluded; in 16 dilated; in 12 the appendix contained concretions; in 1 case the appendix was cystic and had undergone myxomatous degeneration; in 1 case no lymphoid tissue was present. *Conclusions*: (1) In a large number (in his series, 323 out of 370) of pelvic cases no inflammatory changes in the appendix were found even microscopically. (2) When one finds a normal appendix in conjunction with disease of the pelvic organs, it is improbable that the latter condition has been brought about by a perforation of the appendix which had afterwards healed. (3) On the other hand, an old peri-appendicitis and adhesions might often be looked upon as the result of a septic infection, originating in and spreading from the organs of generation. (4) An appendix which looks abnormal macroscopically does not always show inflammatory changes on microscopical examination. (5) Nevertheless, when the removal of the appendix adds very little to the gravity of the abdominal operation, for the benefit of the patient it should be taken away. (6) In his series of 370 cases there were four deaths; but a careful analysis shows that the fatalities should in no instance be attributed to the removal of the appendix.

APPENDICITIS IN ITS RELATION TO PREGNANCY.

DR. HENRY C. COE, of New York, stated that his experience had led him to believe that many mild cases were overlooked, or were mistaken for other affections — adnexal disease, pyelitis, colitis, etc. In view of

the tendency to obstinate constipation and intestinal toxemia, one would expect to find that appendiceal complications were not infrequent during pregnancy. Moreover, many women with a history of former attacks became pregnant, when all the conditions favored recurrences, though they were usually of a mild type.

Eight illustrative cases were cited from the writer's private practice, four patients recovering without operation, two being operated upon at the third and fifth months, without interruption of the pregnancy, while the remaining two were carried through the puerperium and submitted to operation later.

Dr. Coe then discussed the symptoms, diagnosis, differential diagnosis, prognosis and treatment. The writer's views coincided practically with those of Pinard, namely, to treat appendicitis in the pregnant female according to the same rules as in the nonpregnant. In mild cases carry the patient to term, if possible, and operate as soon as convenient after the puerperium, if the trouble persisted. With the persistence of local pain, and if an induration was felt, operate as in any other case. Perforation and abscess formation called for immediate operation, rapid work, as little handling of the uterus as possible and free drainage. *Accouchement forcé*, previous to operation, as recommended by Marx, was not approved by the writer. Since the toxemia of pregnancy was often of intestinal origin, as in appendicitis, careful attention should be paid to the regulation of the bowels by the use of laxatives, high enemata, restricted diet, the drinking of large quantities of water, etc.

DR. A. LAPTHORN SMITH, of Montreal, said that no machine was stronger than its weakest part, and in the human mechanism the weakest part was the one which was the least used. Owing to present methods of living, the vermiform appendix was one of the least used organs, and consequently the weakest. In all cases of pelvic disease, and in most cases of pregnancy in cities, the whole organism was weakened and labored under difficulties. There was, therefore, in such cases a special reason why an organ, which even in man was unable to withstand the attacks of bacteria, should be unusually liable to infection, ulceration and gangrene. In many cases of supposed pelvic disease, and fever after delivery, the appendix was responsible for most of the trouble, although it might not always present gross lesions. Therefore, no woman should be allowed to begin or continue a pregnancy with an appendix which was known to be chronically inflamed, and all operations for the removal of the uterine appendages should begin by the removal of the vermiform appendix.

DR. SETH C. GORDON said it was his invariable rule, whenever he opened the abdomen for any other purpose to remove the appendix, whether good, bad or indifferent.

DR. FREDERICK W. SEARS stated that one should not be fearful about operating upon pregnant women for appendicitis, as his experience had been that they bore the operation better than the nonpregnant. His experience in operating on pregnant women for appendicitis had been limited to three cases.

DR. ANDREW F. CURRIER did not believe that it was good surgery to remove any organ of the body which he was not convinced was diseased. In certain cases in which there was a strong probability of malignant disease, an exception could be made; but the function of the surgeon was to build up rather than to remove.

DR. CLEMENT CLEVELAND looked upon the appendix as a useless organ, and when operating for other intra-abdominal conditions he would not hesitate to remove the appendix. In cases where the appendix had not been found diseased, but had been removed, there was no history to show that any harm had come to those patients. The effect had been *nil*. The arguments of Dr. Currier did not appeal to him.

DR. FERNAND HENROTIN said that so far as clinical observation was concerned, the appendix was not only responsible for inflammatory attacks, but for a good deal of indigestion, colic, dyspeptic symptoms and trouble in the abdomen which was never accurately diagnosed. After an operation for its removal patients were less affected. He would remove the appendix in every instance when operating for some other purpose, unless there were contra-indications to its removal.

DR. HERMAN J. BOLDT said that quite recently a woman, pregnant about the fourth month, had a number of attacks of acute pain in the abdomen. Upon bimanual examination under ether it was impossible to determine anything definite, but because of the extreme pain he opened the abdomen and found an appendix about six inches long, curled upon itself, in a state of acute inflammation. Since its removal the woman had been well. He narrated other similar instances.

DR. JAMES F. BALDWIN, of Columbus, Ohio, had for the last eight years made it a routine practice to examine the appendix in all cases when operating for other intra-abdominal pathological conditions, and had removed the appendix in a large number of cases. Out of 3,000 abdominal sections, he had removed the appendix 1,800 times.

DR. E. P. DAVIS said there were special reasons why appendicitis should appear in pregnant women, and why the appendix should be removed during pregnancy. As a general proposition, the bacillus coli communis was present in abundance in the intestine of every pregnant woman, and any condition of the intestinal tract during pregnancy, which in the slightest degree lessened peristalsis of the normal intestine, predisposed to infection by that organism — infection of the adnexia, the uterus or the appendix. On the other hand, a pregnant woman, whose metabolism was well maintained, was in good condition for a surgical procedure, because she had a physiological blood plethora. She bore anesthesia well. The removal of the appendix was applicable to pregnant women and need not be delayed until after delivery, as it was much safer to do the operation during pregnancy than to let the woman run risk.

DR. ARTHUR W. JOHNSTONE said that his experience had been limited to four operations performed on pregnant women for appendicitis between two and a half and four months. All recovered. There were no miscarriages.

DR. MALCOLM MCLEAN had not arrived at the point where he would remove an organ simply because it might in the future give trouble. He advanced reasons for taking this stand.

DR. ELY VAN DE WARKER saw no reason why, if one saw a perfectly healthy appendix and the abdomen was opened for some other purpose, it should be removed for fear that something was going to happen to it in the future. Such a proposition seemed to him too absurd to discuss. Appendicitis was comparatively rare, in his opinion. In going through the community, and he had spent his life in doing gynecological work, and having opened the abdomen thousands of times, he had examined the appendix and had never removed one, yet he had seen no harm ensue from leaving it. If one were to follow such reasoning, he might as well remove the gall bladder and other organs for fear they would cause trouble in the future.

DR. J. RIDDLE GOFFE did not believe in removing a healthy organ, such as the appendix, when we did not know what its function was. It might have some function. There was a time when physicians did not know the function of the spleen, but it was not removed

because the abdominal cavity was opened. There was a time when we did not know the function of the thyroid gland, but surgeons did not take it out. He thought we might wake up to the fact some day that the appendix had a function.

Dr. Philander A. Harris raised his voice very strongly against removing perfectly healthy appendices unless there was abundant time to do it, or unless the patients desired it.

Dr. H. J. Lipes, of Albany, said the appendix had a decided function. It was composed largely of mucous glands, situated in the lower part of the cecum, and there was no more stagnant portion of the intestinal tract than it, and no portion that needed lubrication more to get rid of the fecal material. He thought this mucous secretion helped along the digestion.

(To be continued.)

Recent Literature.

A System of Clinical Medicine. Dealing with the Diagnosis, Prognosis and Treatment of Disease. For Students and Practitioners. By Thomas D. Savill, M.D., London, Physician to the West End Hospital for Diseases of the Nervous System; Physician to St. John's Hospital for Diseases of the Skin, London; formerly Medical Superintendent for the Paddington Infirmary; Medical Officer of the Paddington Workhouse, etc. Vol. II. Illustrated. London: J. and A. Churchill. Philadelphia: P. Blakiston's Son & Co. 1905.

We have previously commented at length (Boston Medical and Surgical Journal, April 14, 1904) on the first volume of this book, which now with this second volume reaches its completion. We see no reason to change the altogether favorable opinion we then formed of the plan and scope of the book, which has been fully carried out in this concluding volume. The subjects discussed are chapters on general debility, symptoms referable to the skin, to the extremities, to the nervous system, and an epitome of clinical bacteriology and the examination of pathological fluids. The remarkable comprehensiveness of the subject matter might naturally suggest superficiality, but such an idea a glance at the book will wholly disprove. By the use of small type a vast number of facts are introduced, and the whole impression which this book makes, as did its predecessor, is that the author has spared no pains to make his presentation of the various subjects complete. The section on the nervous system, which comprises two hundred and thirty-two pages, is an excellent presentation of a difficult subject, illustrated by the admirable cuts which characterize the entire work and which we wish might have been more numerous in this particular part of the book. The section on mental disease is far less satisfactory, and gives one a poor idea of the present status of knowledge in this field. An excellent index for this volume is appended, as was done also in the first volume. In general, we recommend this book highly as a wonderfully painstaking presentation of the subject of clinical medicine from a diagnostic standpoint. The very fact of its completeness may serve to render it less popular among a certain type of students, but those who are interested in the adequate teaching of clinical methods will welcome it as a noteworthy addition to the increasing number of textbooks.

Studies in General Physiology. By Jacques Loeb, Professor of Physiology in the University of California. Two volumes. Chicago: University of Chicago Press. 1905.

In these two volumes Professor Loeb has gathered together papers he has published in various journals in this country and in Germany on General Physiology. In these papers he has reported the results of his investigations on the response of organisms to light, gravity and the electric current, the conditions of the environment affecting development and the regeneration of organisms, the effects of various salt solutions on muscular and nervous activity, and the production of artificial parthenogenesis. Although these subjects seem diverse, they are, as Professor Loeb remarks, held together by the leading idea "that it is possible to get the life-phenomena under our control and that such a control and nothing else is the aim of biology." Certainly all physicians who regard medicine from the biological point of view will agree with Professor Loeb's attitude. Such physicians will find much in these volumes that is suggestive and stimulating.

A Textbook on the Practice of Gynecology. For Practitioners and Students. By W. Easterly Ashton, M.D., LL.D., Fellow of the American Gynecologic Society, Professor of Gynecology in the Medico-Chirurgical College of Philadelphia. Octavo volume of 1,079 pages, containing 1,046 new and entirely original line drawings. Philadelphia and London: W. B. Saunders & Co. 1905.

This is a treatise and compendium for the general practitioner rather than the gynecologist. It is a large volume of over a thousand pages, but because of the absence of the usual plates and heavy paper is not too unwieldly for easy reference. The anatomical classification is used and each subject is treated with all the attention to minutiæ necessary to make the meaning clear to the average reader. This method of making each subject complete in itself and the practice of figuring all the instruments to be used in each operation makes for repetition, adding somewhat to the size of the volume.

Special noteworthy features are the printing of the important sentences in each chapter in large, spaced type so as to catch the reader's eye, and a great number of original line drawings well executed from nature. These tell the story in many places much better than colored plates or lengthy descriptions, notably in the chapters on

ectopic pregnancy and on the diagnosis of fibroid and ovarian tumors.

It is to be hoped that the second edition will give adequate treatment to the subjects of anteflexion, vaginismus and chronic inversion of the uterus, which as discussed in this edition are hardly in line with modern ideas. There is nothing on chorio-epithelioma and the operation for amputation of the cervix given on page 461 is not a good one, there being no sutures in the cervical canal. Subsequent stenosis after an operation performed by this method would be practically certain.

With these exceptions the book teems with the good common-sense advice of a man who has had an ample experience in the field in which he writes, and, even in these days of a multiplicity of textbooks, is a most welcome addition.

Clinical Treatises on the Pathology and Therapy of Disorders of Metabolism and Nutrition. By PROF. DR. CARL V. NOORDEN. Authorized American edition. Part VI. Drink Restriction (Thirst Cures), Particularly in Obesity. By PROF. CARL V. NOORDEN and DR. HUGO SALOMON. New York: E. B. Treat & Co. 1905.

This monograph is similar to its predecessors. A short historical review of the therapeutic employment of thirsting is followed by a review of the physiological investigations on this topic. The authors then present their own researches, which they based on the determination of the oxygen consumption in the fasting human subject. They point out that restriction of liquids relieves the stomach and heart of work, and makes the fluids of the body more concentrated. The initial loss of body weight is due to the dehydration of the blood and tissues rather than to a loss of fat. The appetite is reduced, and if the reduction of fluids is extreme, increased destruction of albumen occurs. There is, however, no increased combustion of fat. Only rarely is it advantageous to give less than three pints of liquids (counting all food that flows) in twenty-four hours.

Mental Defectives, their History, Treatment, and Training. By MARTIN W. BARR, M.D., Chief Physician Pennsylvania Training School for Feeble-minded Children, Elwyn, Pa. Pp. 368. Philadelphia: P. Blakiston & Co. 1904.

This work is not a strictly scientific one. In the words of the preface, it "addresses itself primarily to anxious parents and earnest teachers rather than to the scientist." It is practically the story of the author's experience for the past twenty years in the observation, care and training of idiots and imbeciles at the well-known institution for that class at Elwyn. It is true as, the author explains, that the psychology and pathology of these abnormal conditions and lesions have yet to gather sufficient data on which to base dogmatic opinion but one feels nevertheless a little disappointed that with so much material for research these branches of the subject should have received only passing attention, while such rare complications as echolalia and adenoma sebaceum come in for separate chapters. However, the book is likely to be helpful and is certainly a practical one. This is notably shown in the "educational" classification formulated by the author which gives the extremes and intermediate grades of mental defect and not only defines the status of the individual, but indicates methods of training together with future possibilities.

An elaborate and interesting history is given of the rise, growth and present status of the work for the amelioration of the feeble-minded, closing with a list of all the existing establishments in the world for this class. An excellent description of the advanced methods of training and treatment follows. The chapter on etiology is most complete and instructive. His own and collected statistics fully bear out, by the way, the opinion of the author and that of a few other authorities that intemperance in the parents is far less potent as a sole cause of idiocy than is generally believed to be the case. Asexualization is warmly advocated but only as a remedial measure preventing crime and tending to the future happiness and comfort of the defective. Corporal punishment is regarded as beneficial in special cases, an opinion which will hardly be shared by most modern authorities on the care of the feeble-minded.

The book is somewhat overburdened with photographs of patients, most of which while they attest the skill of one of the inmates, are of little interest or value except to their friends. Illustrative cases and a chapter on "Stories of the Children" conclude the volume. The whole work breathes a spirit of devotion to the cause of the mental defective and evinces a thorough grasp of the practical and helpful aspect of institutional work for this class.

Hand-book of the Anatomy and Diseases of the Eye and Ear. By D. B. ST. JOHN ROOSA, M.D., LL.D., and A. EDWARD DAVIS, A.M., M.D. Pp. 300. Philadelphia: F. A. Davis Company. 1904.

This is an attractive little book of convenient size and shape and a good example of the printer's and binder's craft. The truths of ophthalmology and otology are so well presented that the noticeable absence of illustration does not detract from its value as a text-book. Although many practitioners may not be quite in harmony with the authors in the trust they place upon the ophthalmometer, in their lack of appreciation for retinoscopy and cycloplegics, in the correction of errors of refraction, and in their adherence to the old-time treatment of diphtheritic ophthalmia, to the exclusion of antitoxin, it is possible, as the methods of physicians are to a great degree influenced by the successful outcome of their cases, that these gentlemen are justified in the opinions which they hold and which may to some seem peculiar.

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ANNUAL REPORT OF THE BOSTON CITY HOSPITAL.

The forty-first annual report of the trustees of the Boston City Hospital for the year ending Jan. 31, 1905, has recently been published. It includes, as usual, the report of the superintendent upon the hospital proper and the various sub-departments, together with the medical and surgical statistics, which have come to form a large, and, within the last few years, valuable addition to the report.

The maximum number of patients treated in the hospital proper at any one time was 491 and the minimum 368, or a daily average of 429. The total number of patients treated in the wards was 9,236. This work was accomplished at a per capita cost to the city of $11.17, taking into account the money collected for paying patients, interest of trust funds and other income. The sum of $52,610.65 has been collected for the care and treatment of patients of all classes, which is an excellent illustration of the fact that hospitals are being more and more sought by those who are able to afford something for their treatment.

The figures for the Out-Patient Department show that during the year 37,608 persons were treated as against 34,734 during the previous year, the total number of visits being upwards of 114,000. The work of the year in this department has been rendered easier through the opening of the new out-patient department building, which was described at length in last year's report. The somewhat modest statement is made that the present accommodations will presumably be sufficient for some years to come. Experience has certainly shown that it is not safe to anticipate that such accommodations will not quickly be outgrown.

The present capacity of the various hospital departments remains the same as in the previous year, namely, 615 beds in the hospital proper, 264 in the South Department, 20 at the Relief Station, and 36 at the Convalescent Home, making a total of 935. Of the beds in the hospital proper 309 are devoted to surgical cases, 237 to the medical, 53 to the gynecological and 16 to the ophthalmic and oral departments. This showing is a poor one for many other important departments of medicine, but we have no doubt that the beds for special departments will increase in number as the demand for them is demonstrated and as the trustees are impressed with their importance. In a modern, completely equipped hospital every recognized department of medical practice should be represented in the hospital wards. The conservatism which prevents this is to be regretted.

The South Department for Infectious Diseases makes its usual gratifying report. Diphtheria, as has repeatedly been stated from this hospital, has decreased enormously since the introduction of antitoxin. Scarlet fever also shows a considerable diminution in mortality, although no specific has been discovered for its treatment. A plea is again made for a separate building for the treatment of measles, which is to be regarded as a more serious affection than ordinarily supposed. The usual argument is adduced, which would appear incontrovertible that in justice to patients suffering from other forms of infectious disease, as well as to those with measles alone, absolutely separate provision should be made for their treatment. Isolation for this disease seems as essential as for others. In the hope that it may reach those who might be benefited thereby, certain advice is given to the parents of patients who are discharged from the wards for infectious diseases in order to prevent the recurrence of return cases. When a patient is discharged, he is given a circular setting forth the dangers of communication of his disease, how such diseases are spread, and what means it is necessary to take to prevent this occurrence. The advice is especially important in cases of scarlet fever.

From the pathological laboratory is printed a list of publications from various men of the department which justifies the statement made in a special report from this department that there has been a distinct advance in the quality of the work done in bacteriology and that a moderate amount of original work has been

accomplished during the year. An appointment of interest is that of Dr. Francis H. Williams to the office of physician for x-ray service. This position has been newly created and is significant of the important place which the x-ray has come to take in modern hospital equipment.

This report varies but slightly from year to year. It is always of interest as showing what may be accomplished by a municipal institution in which the best interests of the patients are considered apart from political considerations. The Boston City Hospital has taken a justifiably high rank among institutions of this character.

THE INTERNATIONAL SURGICAL SOCIETY.

The first Congress of the International Surgical Society was held at Brussels from the 18th to the 23d of September under the patronage of Leopold II, King of Belgium. This Congress has a peculiar significance inasmuch as for the first time it has brought together men standing high in surgical science from various countries. We have repeatedly commented upon the closer affiliation which the last few years have seen between medical men of countries separated widely, both by distance and by language. The successful inauguration of this Congress is a further demonstration of this fact. The proceedings were held in French which appears still to retain its place for such occasions, but we learn from an American correspondent that the rapidity of speech was such that much was lost by English hearers. This is a natural state of affairs and will no doubt always in a measure stand in the way of the complete realization of the possibilities of these meetings. The benefit of association, however, with men working in the same field in different countries should counterbalance such a disadvantage.

Sixteen members of the Association were present from America, among whom were Drs. Warren, A. T. Cabot, Mixter, Bradford and M. H. Richardson from Boston; Dr. Keen from Philadelphia; Dr. McCosh from New York; Dr. Gerrish from Portland, Me., and a number of other representative men. The entertainment provided was lavish, particularly in the way of dinners, the spacious houses of the entertaining physicians lending themselves to this form of entertainment. Dr. Lorthioir, for example, received sixty-seven at his house, and this without crowding.

The program naturally included a discussion of the subjects now chiefly before the surgical world. Very considerable attention, for example, was given to the treatment of new growths of the stomach and to the general subject of hypertrophy of the prostate. Considering the shortness of the time allowed each speaker, the papers were rapidly read and, no doubt, as we have suggested, frequently imperfectly understood. Discussions were correspondingly brief, although the graciousness of the presiding officer, Dr. Kocher, was such that the speakers frequently overran their time, a common failing wherever men talk on their feet. We have no doubt that this Congress will prove to be the first of many to come, and we venture the prediction that it may serve in a measure as a school of language as well as a means of good fellowship and scientific progress.

MEDICAL NOTES.

International Congress of Surgery. — Professor Czerny has been elected president of the International Society of Surgery for the ensuing year and Brussels has again been chosen as the place of meeting.

The Circulation of the Blood. — It is stated that an original copy of the pamphlet by William Harvey on the "Circulation of the Blood," which was published in 1628, has recently brought £30.

Report from the Philippine Islands. — In a recent monthly report of the Board of Health of the Philippine Islands it is stated that an excess in the number of births over deaths was noted for the first time in April of this year. It is, however, unquestioned that many births are not reported. Two cases of unusual longevity are registered, one of a man who died at the age of one hundred years, and the other a woman who reached the age of one hundred and five. During the month the medical inspectors and the municipal physicians attended 362 patients in the clinics established at the health stations. The municipal physicians treated 346 patients at their residences and made a total of 1,330 visits to out-patients.

Conference of Sanitary Officers. — On the 4th and 5th of October the fifth annual conference of Sanitary Officers of New York State was held in the Assembly Chamber of the Capitol at Albany. Important subjects relative to public health were discussed, among which is that of the status of pneumonia and cerebro-spinal meningitis as contagious diseases. A

paper on this subject will be read by Dr. William H. Park of New York. The purpose of these annual conferences is to increase the efficiency of local boards of health, to furnish instruction on practical topics and to secure a uniform system of sanitation. The meetings have invariably been well attended.

Medical Registration. — At the time of going to press the registration at the Harvard Medical School is stated to be seventy-eight for the entering class, which is about ten more than the class last year. This number is expected to be somewhat increased. The number of students registering at the College of Physicians and Surgeons in New York, which is the medical department of Columbia University, is between eighty and ninety. The general decrease in the number of students entering our best medical schools is no doubt in part due to the increased requirements, but we are inclined to think that there are other and more subtle causes also at work.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, Oct. 4, 1905, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 23, scarlatina 13, typhoid fever 34, measles 18, tuberculosis 43, smallpox 0.

The death-rate of the reported deaths for the week ending Oct. 4, 1905, was 17.10.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, Sept. 30, 1905, is 187, against 213 the corresponding week of last year, showing a decrease of 26 deaths, and making the death-rate for the week 15.53. Of this number 105 were males and 82 were females; 183 were white and 4 colored; 114 were born in the United States, 69 in foreign countries, and 4 unknown; 41 were of American parentage, 131 of foreign parentage, and 15 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 21 cases and 1 death; scarlatina, 10 cases and no deaths; typhoid fever, 45 cases and 5 deaths; measles, 11 cases and no deaths; tuberculosis, 41 cases and 24 deaths; smallpox, no cases and no deaths. The deaths from pneumonia were 8, whooping cough 0, heart disease 25, bronchitis 8, and marasmus 4. There were 19 deaths from violent causes. The number of children who died under one year was 37; the number under five years, 51. The number of persons who died over sixty years of age was 31. The deaths in public institutions were 65.

There were 3 deaths from cerebrospinal meningitis during this week.

A State Sanatorium for Tuberculosis. — It is reported that Senator Proctor of Vermont has given about $50,000 for the erection of a state sanatorium for tuberculosis in his native state. It is furthermore announced that he proposes to endow this institution to the extent of $100,000, a provision which will no doubt be appreciated by the management. The hospital is designed to accommodate from twenty-five to thirty patients.

NEW YORK.

Quadruplets. — On Sept. 27 Mrs. David Johnson, of Kingston, N. J., gave birth to quadruplets. All the children are males and all are expected to live. This is said to be only the sixth authentic case of the kind reported in this country.

Donation to Sanitarium for Hebrew Children. — Jacob H. Schiff, the banker, has offered a donation of $10,000 to the building fund of the Sanitarium for Hebrew Children at Rockaway Beach on condition that the additional $25,000 required for the completion of a contemplated new wing to the sanitarium is received by April 1, 1906. At a meeting of the board of directors of the institution held Sept. 29 plans were made to raise the requisite sum, and it is stated that a considerable portion of the amount was subscribed before the meeting adjourned.

A Tribute to Dr. H. M. Biggs. — Dr. Thomas Darlington, President of the New York Board of Health, delivered a lecture on tuberculosis on Sept. 25, at Parson's Theatre, Hartford; Conn., under the auspices of the West Side Workingmen's Club of that city. In the course of it he said that the fact that New York to-day stands foremost in the warfare against tuberculosis was due, more than to any other one cause, to the persistent efforts of Dr. H. M. Biggs, Medical Officer of the Health Department.

Purity of Croton Water Supply. — Both the Health and Water Departments having arrived at the conclusion that the conditions at Mount Kisco in Westchester County are such as to endanger the purity of the Croton water supply, the engineers have made a report in which they recommend the acquisition by the city of 71 parcels of land, containing 113,234 acres, at an assessed valuation of $70,000. They also

advise the taking of a smaller section of land, comprising 54 acres, for a sewage plant. These measures have been presented to the Board of Estimate and Apportionment, but no definite action in the matter has as yet been taken by the board.

NEW YORK STATE HOSPITAL FOR INCIPIENT TUBERCULOSIS. — On Sept. 29 the trustees of the New York State Hospital for Incipient Pulmonary Tuberculosis, in the Adirondacks, issued their completed statistics for the first year of the institution, which show an excellent percentage of recoveries and improvements. The hospital is located three miles from Saranac Lake, in the direction of Lake Placid, on a tract of 516 acres adjoining the state forest reserve. The altitude is 1,635 feet. Discrimination is exercised in the first examination of patients, and no advanced cases are sent to the hospital. There were admitted 207 patients, in more than half of whom the disease was unquestionably in the incipient stage, and there were no deaths. Of the 105 patients discharged, 52 were apparently recovered, but the hospital authorities do not regard a case as positively cured until two years or more have elapsed without any evidence of the disease. Twenty-six arrested cases are reported; 16 improved, while 11 patients left without any improvement. Of the latter number, 4 remained at the institution less than a week, 5 less than a month, and 2 less than six weeks. The treatment consists mainly of outdoor air, rest and a very generous diet, the patients receiving three full meals a day, with three lighter meals in the intervals. The effect of the regimen is shown by the marked gain in weight, 90 of the 105 patients discharged gaining an average of 10.57 pounds each. The sanatorium is intended for patients unable to pay for treatment at a private institution, and admission is obtained through the local authorities in the various parts of the state. Of the five trustees, two are physicians, Drs. Willis G. Macdonald of Albany and Elmer E. Larkin of Plattsburgh.

PURITY OF MILK SUPPLY. — The Health Department reports that the milk supply of the city was never better than at the present time. Among the recent efforts of the department to keep this pure was the condemnation as public nuisances of thirty-three places within the city limits at which cows to the number of more than eight hundred were kept. During the first six months of the present year $10,000 was received in penalties from milk dealers, an amount four times greater than ever before in the same period of time. Also, more than 76,000 quarts of milk were condemned and destroyed by the inspectors of the department.

Obituary.

JAMES READ CHADWICK, M.D.

THE medical profession has sustained a great loss in the death of James Read Chadwick, which occurred suddenly at his country house in Chocorua, N. H., Sept. 23.

He was born in Boston, Nov. 2, 1844; was educated in the Boston schools, and graduated from Harvard College in 1865. After graduation he travelled abroad; on his return he entered the Harvard Medical School. From the time when Dr. Chadwick was graduated from the Harvard Medical School in 1871 he evinced an especial interest in the diseases of women, then a new specialty, and, after spending two years abroad in the study of this branch, he became one of the leading gynecologists of Boston. It was through his efforts that the American Gynecological Society was formed in 1876. He was the secretary and guiding spirit of the society for the first six years of its existence, and he continued to have a large share in the direction of its destinies even after he became president in 1897. His influence in the society was always on the side of high aims and able men and against self seeking and medical politicians.

Dr. Chadwick was an ardent booklover and was really the founder of the Boston Medical Library in 1875. From its inception he was the librarian and he worked early and late in its interests, giving of his own library and means, and arousing enthusiasm for the same object in others. It was through his inspiration and untiring efforts, extending over a period of twenty-five years, that the present handsome building on the Fenway became possible. He always carried his want book with him on his frequent journeys, and many the librarian and book collector who has contributed of his store to complete the files of the Boston Medical Library, for Dr. Chadwick did not hesitate to make known his wants, and, in like measure, the duplicates of the library were always at the disposal of others. His last literary work was the preparation of a paper on the Library to be read before the meeting of the Association of Hospital Superintendents held in Boston last week.

While clinical instructor in the Harvard Medical School, he brought to the students the results of his training in Germany, and taught them to observe and to exercise independence of judgment. He was instrumental in organizing the Harvard Medical Alumni Association in 1891, and was president of the association until 1894.

He was much interested in the subject of cremation and was for many years the president of the Massachusetts Cremation Society, laboring

constantly to advance its interests. It was peculiarly fitting that his funeral should be held in the chapel of the crematory at Forest Hills which he was to such a large extent instrumental in building.

Dr. Chadwick contributed numerous articles to medical literature mainly on the topics of gynecology, libraries and cremation. His paper on the results of his researches in the anatomy and physiology of the rectum was a distinct advance on the knowledge of the time, and has been quoted extensively in treatises and textbooks on gynecology. On his return from studying abroad he translated Winckel's work on "Puerperal Fever," part of his time having been spent at the author's clinic in Dresden. During a later trip to the continent of Europe he picked up a rare pamphlet by Schöpff, a surgeon in the German contingent during our Revolutionary War, on the "Climate and Diseases of America." This he translated and edited, and it was published in part in this JOURNAL (Vol. 92) in 1875. The incident is characteristic of his keenness as a collector and bibliographer. He was a devoted admirer of Oliver Wendell Holmes, and made a considerable collection of early editions of his writings and of souvenirs of the man.

He was a ready and finished public speaker and made numerous addresses in various parts of the country on the subjects which interested him most. A man of many interests, broad minded and singularly free from narrow prejudices, his strong personality inspired the trust and confidence of his patients, and his frequent acts of kindness to the poor would, if known, have won him the admiration of all. Personally Dr. Chadwick was a rare combination of modern push and old-fashioned courtesy. He was a delightful host, a clever conversationalist, generous to a fault, and, on account of a certain spontaneity, seemed younger than his years. He had many friends in various circles and among them were numbered such men as Drs. Osler, Weir Mitchell, J. S. Billings and William James. In many places and many ways the cessation of his activity will be felt. His genial presence and energetic personality will be very sensibly missed among us.

Dr. Chadwick's wife, a daughter of the late Dr. G. H. Lyman, died abroad a number of years ago. Three daughters and a son survive him.

Correspondence.

A LETTER FROM JAPAN.

A MILITARY HOSPITAL OF JAPAN; THE JAPANESE RED CROSS-SHIBUYA MILITARY BRANCH HOSPITAL IN TOKYO.

NAGASAKI, JAPAN, Sept. 8, 1905.

Mr. Editor: It was my fortune twelve days ago to be afforded an opportunity of visiting in Tokyo what is reputed to be its very best hospital in all that gigantic military base. Through the effective efforts of our American Legation in Tokyo, the courtesy was extended officially in the form of a permit from the Department of War, and the day and hour stated in the permit when the visiting privilege was to be granted found me at the main office of the Hospital Administration Building of the Red Cross-Shibuya Institution. Sentries had to be passed along the route, of course, until I reached the Administration Office and my permit-pass was very scrupulously examined, but at last at the doorway a neatly uniformed and smiling Jap boy, full of gracefully low and profuse bows, took my card and permit, and was off with both to the proper officials, whilst I was bowed by another official into a reception room, where tea and cigarettes were brought for my refreshment. After a wait of perhaps half an hour an officer arrived. We exchanged cards. After shaking hands very cordially with profuse bows, the officer informed me in fairly good English that he was the chief pharmacist of the hospital, and would act as my host, guide and interpreter through the hospital divisions and grounds. Before we made our start, however (it was afternoon about 2 P.M.), in reply to some of my questions, he sat down and sketched on a small map, for my benefit, the most important localities, buildings, works, etc., inside the 60-acre hospital enclosure. The hospital grounds are laid out in a very charming looking park with thousands of cedar, pine, cryptomeria and other trees of this class. There are many picturesque little hillsides and ravines; the grounds are on a high elevation, and the level stretches on which stand the fifty odd units of hospital buildings, appeared almost as though nature constructed them for this particular hospital purpose.

The grounds are divided into four main divisions, each with its particular quota of buildings and class of cases. For example, Division No. 1, covering about fifteen acres, comprises within its limits the wards containing the major portion of the surgical patients. It has a surgical operating room, kitchen, pharmaceutical dispensary, and canteen. There is an administration building, and an auditorium for the pleasure and instruction of the convalescents and officials of the institution. The afternoon of my visit this auditorium, holding approximately three hundred when comfortably full, was the scene of a medical assembly of military surgeons from the medical corps. The meeting was being addressed very quietly, yet with intense earnestness, by the surgeon general of the hospital on the subject of certain phases of surgery that had come within his immediate observation and experience during the war just ended. Several scores of charts giving statistics, and outline diagrams of particular surgical fields of the human body which were being discussed, decorated the platform and walls within easy, clear sight of every person in the auditorium.

One of the first and decidedly striking impressions my visit to this auditorium afforded was the intense interest and alertness of mind with which everybody listened to the remarks of the platform speaker. This eager attitude to learn of these Japanese physicians at this medical assembly, I found, as my visit through the hospital progressed, was not only evident during their medical meetings, but at all times. Wherever I observed them at work, and whatever they happened to be doing, it was the same. This alert attitude I found was not only in the medical corps of the Japanese hospital officials, but it was very plainly apparent in the lower rank and files of attendants throughout the wards, the Red Cross nurses, the clerks in the different offices, and down along the line of the hospital's patients. Every face almost, throughout the entire hospital, plainly expressed the eager desire to learn, which was so evident in the instance of the officers in the medical assembly. Even the nerve-racked, jaded patient, recently from the front, and now convalescing, would bring all his faculties to "attention" and "sit up and take notice," as is the colloquialism, when we would visit his ward, and particularly his bedside locality.

After our entrance to the auditorium, which was the first place visited, and at the entrance to which one ought to remove his shoes, entering in stocking feet, and leaving the shoes without (no unnecessary dirt will the Japanese allow to be brought into their buildings) we proceeded to go through the convalescent surgical wards.

In spite, however, of the Japanese custom of allowing no one to walk on their floors with shoes, this unwritten

law was waived in my case, somehow; being a foreigner and an American physician whom they wished to treat with every possible courtesy I was gracefully made an exception. My guide also kept his shoes on, his official position and out of polite deference to his guest, no doubt having much to do with the matter.

To obtain a good idea of the plan of the hospital buildings through which we passed, is very simple, if it can be imagined that each ward was a house unit in itself, connected with its parallel neighbor by a small hallway. In size, each ward was approximately about twenty-five feet wide and two hundred long. Each was built of plain cedar wood, one story high, with a V-shaped roof, covered with thick tar paper. Groups of from ten to fifteen of these wards would be joined together. At the end of each one of these units was a double roomed extension. In one room was a bath, in the other the Japanese water closet. The bath consisted chiefly of a huge wooden tub filled with water, from which the patient dipped. The closet was simply a hole with a seat, and a large wooden pail under the hole, the pails being collected daily and their contents dumped and carried to the country where it is used as fertilizer in the gardens and on the farm areas.

The capacity of each ward when the soldiers' wooden beds were placed close together was estimated at one hundred, though fifty was what each was accommodating, approximately, during my visit. On duty, caring for the sick in each of the advanced convalescent wards, was a hospital corps sergeant with six male nurses under his direction. Records of every patient, the temperature, pulse and respiration of every morning and evening, bowel movements, medicine administered, etc., were kept on exactly similar principles to the European and American systems of recording a patient's history. Twice each day, the physician in charge of the ward made his rounds. His orders for each individual patient were written out and posted on a bulletin board at the entrance to the ward in the hallway. Thus it is known readily and with certainty just what patients are to be attended one particular way, what another. One doctor is in charge of from two to four wards. The capacity of the entire hospital, my guide informed me, was about four thousand, but at the time of my visit there were only 2,400 patients there. While many of the cases ran a very protracted course, the average number of confinement days for the majority of the wounded and diseased soldiers admitted and up to the time of their discharge from the hospital was forty days. This, while not an estimate fresh from the book of record at the hospital, yet, was the one advanced by my guide after conference with a number of the nurses, both male and female nurses, and one of the hospital physicians, working in the wards.

In looking through the surgical sections of the more serious cases, the patients were attended by women nurses, members of the Red Cross. Each head nurse of the ward was distinguished by a pair of double silver stars worn on the collar, the regular nurses wearing a single gold star, the student nurses being distinguished by having no insignia whatever. Ten of these little plucky Jap women handle the work in a ward for a straightaway twenty-four hours, and they impressed me as being a very able, efficient class of nurses.

As we went about from bedside to bedside, through ward after ward, many very interesting cases were observed. In the surgical wards I saw a number of amputation results. The majority were ideal. In feeling the stumps of many, my fingers invariably ran against a smooth, well bevelled edge of bone, rather than a rough edge or corner. Some of the plastic work was admirably done. One fellow I now recall had his mandible, left side, badly shattered by a piece of shrapnel during the fight on 203 Meter Hill. The photograph taken of the wound revealed an enormous wound. The patient evidently fell into the hands of a decidedly ingenious, skillful surgeon for when I saw him the other day, he was moving his jaw up and down with a normal movement, a piece of aluminum acting as a substitute for the great mass of missing mandible, and the wound was almost healed.

One of the strange bullet-wound cases I now recall was that in a patient wounded at the fight at Lio Yang. The bullet entered left side of neck at site of exit of superficial cervical plexus, and made its exit immediately above the middle of the right clavicle. He was paralyzed in the right arm, and on the left side of his neck.

In the beri-beri wards were many patients in various stages of this insidious tropical disease, some in the dropsical stage, others in the atrophic. All were getting the best dietetic, electrical, medical and massage treatment that modern science knows and advocates here in the far East. Much highly skilled laboratory work has been done in connection with this disease among the Japanese scientists, especially during recent years.

The opinion expressed to me by Dr. Miura, professor of clinical medicine in the University of Tokyo, whose experience with this malady has been as extensive as his magnificent laboratory facilities are advanced and up-to-date, and his pathological work important, is, that the chief and most vital causative factor in beri-beri is unfavorable hygienic conditions. "Put a beri-beri case on the most approved kind of a diet, give him the benefit of the most conscientious electrical, medicinal and massage treatment, and allow him to still live under unfavorable sanitary conditions and there is no cure for beri-beri. Change the sanitary conditions to the best, and unless the degenerative processes in the nerves, the posterior cord and the muscles have progressed too far, a marked beneficial improvement can be achieved in the worst cases and a cure in the more acute ones."

This is Dr. Miura's opinion on beri-beri. He has been laboring with this disease lately in the Tokyo military hospitals, and for years before the war elsewhere.

But there are other phases of a hospital besides its medical and surgical sides. One very essential part of the Red Cross-Shibuya institution is its kitchens. I was afforded opportunity to observe in detail one such during my vist. There are two or three which supply the entire hospital. Charcoal is the fuel. About one dozen giant iron kettles shaped like a huge ladle rest on a sort of brick stand. The fire is beneath. In some of these receptacles is rice cooked for ten minutes in boiling water. Some contain the other ingredients of the Japanese meal of soy and a mixture of fish and vegetables. Everything is kept scrupulously clean. Soldiers have no provision for a dining room and their rations are transported to them on wagon trucks carrying bamboo trays. Each man receives a wooden box, the size of an American brick. It is filled with rice. In a large deep cup is issued his other soft foods, while on the side are pieces of fruit, a cold vegetable, biscuit or whatever particular food happens to be the "extra" for the meal.

In the matter of pleasure for the convalescents there is provided, besides the auditorium, several canteens which are distributed at different parts of the grounds at which a soldier may purchase simple delicacies in the way of eatables. No alcoholics are saleable.

Though I missed a visit to the hospital laboratory, owing to my guide being greatly pressed for time, yet, from the laboratories of other military hospitals which I have observed, in Tokyo, Hiroshima and Sasebo, I have every reason to believe the Red Cross-Shibuya in Tokyo was on a plane with these others, which was of the highest.

In the matter of surgical operating rooms press for time on the part of my guide also prevented a leisurely detailed observation, but from the rapid survey I took of the biggest one the Red Cross possesses, I found the most simple and modern sterilizers, metal receptacles for sterile gauze, cotton, glass receptacles for solutions, etc., all of the most approved up-to-date style, and opened by foot leverage entirely. The sterilizing technique facilities of the operating room appeared to me to be of the world's best.

That the Japanese military Red Cross-Shibuya is a well equipped plant on the most modern scientific basis is a fact that one realizes more and more in passing through its wards and buildings. There is so much that is to be seen of great medical interest, that even though one may have seen a goodly portion yet the realization of this fact only brings up the truth of the great amount passed by and unrecognized, and it is with a feeling of regret that you are apt to turn away from this hospital after a bird's-eye view of all that it contains within its wards. Suc-

ceeding this is apt to come a very marked rise in your degree of professional respect for, and appreciation of, the Japanese medical man. Where heretofore he may have been passed by with little more than a hurried thought, possibly a hasty remark of his progressiveness, he now compels a recognition of his medical equality.

The Japanese medical man has made his place in the scientific medical world, and he has made it on his own qualifications, and that these qualifications are of the highest one good look through any of the Japanese military hospitals will afford an American physician sufficient evidence to prove eminently satisfying, no matter how critical he may be.

These hastily collected ideas and observations do not pretend to be anything other than they are, simply an everyday expression, hastily put down, of one of Japan's best hospitals, as observed within the limits of a three-hour visit by an ordinary American general practitioner.

Very truly yours,

DONALD G. MCCASKEY, M.D.

REPORT OF PORTO RICO ANEMIA COMMISSION.

THE TREATMENT OF UNCINARIASIS.

AIBONITO, P. R., Sept. 13, 1905.

Mr. Editor: It has come to our notice that the report of this Commission, published Dec. 1, 1904, is being used by the manufacturers of Gude's Pepto-Mangan to advertise their preparation of iron. As this advertisement puts us an a very unenviable and erroneous light before the medical profession generally, will you be kind enough to publish the following statement:

The advertisement in question purports to be a review of this Report and, having attracted attention, proceeds by erroneous deductions and half-quotations in such a manner that one might believe that the Commission indorsed their preparation of iron as the best hematic in the treatment of the anemia of uncinariasis.

As a matter of fact, the Report (page 119) clearly states that we found the carbonate of iron to give the best results. Our Report, on account of the limited edition, has never reached the majority of our professional brethren and for this reason we quote the portion referred to:

"It will be noticed that slight cases readily recover without iron and here the difference in the tables is more marked while there is less difference among the marked cases in proportion to their number. In other words, the more resistant cases of all grades received iron, but even then, did not generally recover as rapidly as those less rebellious without, for while ferruginous preparations seem to act readily in some instances, still, in the majority, its effect was not marked. The rapidity of ours is due, apparently, more to the personal equation of the patient and the rapidity with which the parasites are expelled, than to the amount of reconstructive treatment. Thus it is quite difficult to accurately judge the comparative value of different iron preparations, yet it was noted, even by some patients, that Blaud's pills gave more rapid results."

We do not believe that a perusal of the histories of the eighteen cases which the advertisement quotes, demonstrates the superiority of Pepto-Mangan (Gude), as these patients recovered more slowly than others of the same type who took "Blaud's pills or Vallet's mass. In fact, on account of this slow recovery the carbonate of iron was substituted for pepto-mangan in five of the eighteen cases, (Cases 8, 9, 10, 13 and 15). We ceased to use pepto-mangan and gave none to the later cases.

To support our statement, we invite attention to the following figures taken from those given in the very Report which M. J. Breitenbach Company cite as proving the superiority of their preparation:

There are sixty-one cases reported in full with complete blood records and clinical histories. In eighteen of them, pepto-mangan was used save toward the termination of five of them, when Blaud's pills were substituted. In eleven cases, Vallet's mass was used, supplemented by Blaud's pills. In twenty-nine cases, Blaud's pills were used exclusively. Three cases have no bearing on the subject.

But to bring out the difference between these drugs more vividly, eighteen pair of cases of like type have been

Reconstructive treatment	Pepto-mangan (Gude)	Blaud's pills	Vallet's mass
Average hemoglobin % before treatment,	20.7%	26.5%	18.1%
Average number days under treatment,	80.7	47.9	69.8
Average gain in hemoglobin during treatment,	62.3%	66.8%	66.6%

tabulated, whose initial hemoglobins absolutely or nearly correspond. One of each pair was treated by Blaud's pills, the other by pepto-mangan. The demonstration is all the more potent in that both drugs were used in their true rôle as blood regenerators, in conjunction with thymol administered to both alike.

Case No.	Form of Iron Used.	Hemoglobin before Treatment. Per cent.	Days under Treatment.	Total Gain Hemoglobin. Per cent.
1	Pepto-mangan	33	100	68
56	Blaud's pills	33	56	70
3	Pepto-mangan	25	71	78
52	Blaud's pills	25	36	75
4	Pepto-mangan	28	97	72
50	Blaud's pills	27	36	75
6	Pepto-mangan	22	101	48
25	Blaud's pills	22	43	78
7	Pepto-mangan	10	63	93
28	Blaud's pills	11	71	90
8	Pepto-mangan	34	101	44
46	Blaud's pills	35	36	69
9	Pepto-mangan	20	99	83
43	Blaud's pills	20	50	81
10	Pepto-mangan	20	92	84
51	Blaud's pills	20	50	63
11	Pepto-mangan	32	95	48
47	Blaud's pills	32	36	70
12	Pepto-mangan	27	80	3
53	Blaud's pills	25	50	84
13	Pepto-mangan	14	94	95
23	Blaud's pills	14	50	66
14	Pepto-mangan	16	93	85
45	Blaud's pills	16	57	46
15	Pepto-mangan	11	84	99
22	Blaud's pills	12	71	92
16	Pepto-mangan	20	92	70
60	Blaud's pills	19	28	71
17	Pepto-mangan	9	36	6
21	Blaud's pills	13	71	89
18	Pepto-mangan	16	98	66
59	Blaud's pills	18	53	67
19	Pepto-mangan	28	49	75
42	Blaud's pills	31	57	3
33	Pepto-mangan	9	8	6
20	Blaud's pills	22	27	48

That is to say, of eighteen pair of almost identical cases, the initial average of hemoglobin percentage in the cases treated by Blaud's pills was 21.9; in those treated by pepto-mangan (Gude), 20.7; the average number of days under treatment was 48.7 of the cases treated by Blaud's pills; in those treated by pepto-mangan (Gude), 80.7; the average gain of hemoglobin under Blaud's pills was 68.1%; under pepto-mangan (Gude), 62.3%.

We tried to use a variety of iron preparations and were offered the pepto-manganates made by this company. We had no idea that this preparation differed essentially from any other pepto-manganate of iron, and it certainly may not, but had we considered the pepto-manganates of superior value as blood regenerators, we would have said so. As it is, we have said the contrary and wrote this company to that effect at the time we became convinced of it.

This Commission does not wish to be understood to consider the use of reconstructive treatment as a necessity in the anemia of uncinariasis. Such an idea is all the more absurd in view of the fact that in the 12,000 cases treated under its direction since June 1, 1905, comparatively little reconstructive treatment has been used, many cases receiving none at all. As our experience with this disease widens, our opinion is strengthened that anthelmintic treatment is not only curative, but promptly so in the vast majority of cases, iron or no iron.

Thanking you in advance for the use of your columns, we are,

Very truly yours,

BAILEY K. ASHFORD,
W. W. KING,
PEDRO GUTIERREZ YGARAVIDEZ,
Members of the Commission.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, SEPT. 23, 1905.

CITIES.	Population.*	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diphtheria and croup.	Typhoid Fever.	Cerebro-spinal Menin-gitis.
New York . .	3,908,644	1,311	448	30.12	8.08	1.38	1.15	1.15
Chicago . . .	1,990,750	512	207	27.89	4.68	1.56	1.75	.19
Philadelphia	1,407,968	409	132	30.79	5.62	.49	2.69	—
St. Louis . .	633,606	—	—	—	—	—	—	—
Baltimore . .	542,229	196	67	27.16	7.65	.51	3.57	—
Cleveland . .	444,251	—	—	—	—	—	—	—
Buffalo . . .	400,645	—	—	—	—	—	—	—
Pittsburg . .	382,403	119	44	15.12	6.72	.84	4.20	—
Cincinnati . .	338,277	—	—	—	—	—	—	—
Milwaukee .	325,900	—	—	—	—	—	—	—
Washington .	300,776	—	—	—	—	—	—	—
Providence .	196,744	67	24	20.90	7.46	—	1.49	—
Boston . . .	593,598	200	74	27.50	7.50	1.00	4.00	—
Worcester . .	127,963	39	18	30.77	—	—	10.26	5.13
Fall River .	105,697	25	15	44.00	8.00	—	—	—
Cambridge .	97,426	31	14	22.58	6.45	6.45	3.23	—
Lowell . . .	94,845	37	15	10.81	8.11	2.70	—	—
Lynn	77,025	26	14	26.92	—	—	3.85	—
New Bedford	74,321	25	14	28.00	8.00	4.00	—	—
Springfield	73,484	23	4	13.04	—	4.35	—	—
Lawrence . .	69,939	29	14	34.48	13.79	—	—	—
Somerville .	68,188	13	3	7.69	—	7.69	—	—
Holyoke . .	49,124	13	5	30.77	—	—	—	—
Brockton . .	47,782	12	4	25.00	—	—	—	—
Malden . . .	37,960	8	3	25.00	—	—	—	—
Haverhill . .	37,818	8	1	25.00	—	—	12.50	—
Salem . . .	37,586	19	11	10.53	—	—	5.26	—
Chelsea . . .	37,277	18	9	16.67	—	—	5.56	—
Newton . . .	36,694	9	3	22.22	—	—	11.11	—
Fitchburg . .	33,917	17	7	17.65	11.76	—	5.88	—
Taunton . . .	30,952	16	3	37.50	—	—	6.25	—
Everett . . .	29,108	8	4	12.50	—	—	—	—
Quincy . . .	28,067	8	3	50.00	—	—	—	—
Waltham . .	26,239	5	2	20.00	—	—	20.00	—
Gloucester .	26,008	—	—	—	—	—	—	—
Pittsfield . .	25,000	8	2	25.00	25.00	—	12.50	—
Brookline . .	23,424	7	1	42.86	—	—	—	—
North Adams	22,125	6	0	33.33	—	—	—	—
Chicopee . .	20,187	7	6	42.86	14.29	—	—	—
Northampton	19,942	4	3	—	—	—	—	—
Medford . .	19,638	2	—	50.00	—	—	—	—
Beverly . . .	15,222	4	1	—	25.00	—	—	—
Newburyport	14,673	6	2	—	—	—	—	—
Hyde Park .	14,492	4	2	—	—	—	—	—
Woburn . . .	14,401	6	1	50.00	—	—	33.33	—
Melrose . . .	14,398	6	2	33.33	—	—	—	—
Leominster .	14,290	—	—	—	—	—	—	—
Marlboro . .	14,072	—	—	—	—	—	—	—
Westfield . .	13,099	10	5	20.00	—	—	10.00	—
Clinton . . .	13,103	4	1	25.00	—	—	25.00	—
Peabody . .	13,097	—	—	—	—	—	—	—
Attleboro . .	12,702	—	—	—	—	—	—	—
Revere . . .	12,647	5	2	20.00	—	—	—	—
Adams . . .	12,482	4	—	—	—	—	—	—
Milford . . .	12,105	—	—	—	—	—	—	—
Gardner . .	11,981	2	1	—	—	—	—	—
Weymouth .	11,585	3	1	—	—	—	—	—
Framingham	11,549	—	—	—	—	—	—	—
Watertown .	11,202	2	0	—	—	—	—	—
Plymouth . .	11,118	—	—	—	—	—	—	—
Southbridge .	10,947	2	2	50.00	—	—	—	—
Wakefield . .	—	—	—	—	—	—	—	—

*The population given for cities outside of Massachusetts is estimated. Those of Massachusetts are from the Census of 1905.

Deaths reported, 3,295; under five years of age, 1,194; principal infectious diseases (smallpox, measles, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 967; acute lung diseases 218, consumption 330, scarlet fever 4, whooping cough 27, cerebrospinal meningitis 18, smallpox 0, erysipelas 0, puerperal fever 20, measles 5, typhoid fever 74, diarrheal diseases 451, diphtheria and croup 38.

From whooping cough, New York 9, Chicago 8, Philadelphia 2, Baltimore 3, Pittsburg 2, Boston 2, Pittsfield 1. From scarlet fever, New York 1, Pittsburg 3. From cerebro-spinal meningitis, New York 15, Chicago 1, Worcester 2. From measles, New York 1, Chicago 1, Baltimore 2, Pittsburg 1. From diphtheria and croup, New York 18, Chicago 8, Philadelphia 2, Baltimore 1, Pittsburg 1, Boston 2, Cambridge 2, Lowell, New Bedford, Springfield and Somerville, 1 each.

In the seventy-six great towns of England and Wales, with an estimated population of 15,609,377, for the week ending Sept. 16, 1905, the death-rate was 14.3. Deaths reported 4,270; acute diseases of the respiratory organs (London) 48, whooping cough 63, diphtheria 46, measles 27, smallpox 0, scarlet fever 39.

The death-rate ranged from 5.6 in Hornsey to 24.9 in Great Yarmouth; London 13.2, West Ham 11.8, Brighton 13.9, Southampton 11.8, Plymouth 14.8, Bristol 11.2, Birmingham 15.6, Leicester 13.7, Nottingham 11.0, Birkenhead 14.4, Liverpool 18.6, Wigan 16.3, Bolton 16.1, Manchester 18.2, Salford 16.4, Halifax 19.7, Bradford 14.0, Leeds 14.0, Hull 15.6, Sheffield 14.3, Newcastle-on-Tyne 18.1, Cardiff 13.0, Rhondda 17.5, King's Norton 11.2 and Burnley 13.8.

METEOROLOGICAL RECORD.

For the week ending Sept. 23, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

DATE	Barometer.	Thermometer.			Relative humidity.			Direction of wind.		Velocity of wind.		Weather*		Rainfall in inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A.M.	8.00 P.M.	Daily mean.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	
S. . 17	30.27	64	69	59	87	79	83	S	S E	4	14	O.	O.	.01
M. 18	30.19	63	64	59	81	96	88	S	E E	6	1	O.	R.	.02
T. . 19	30.10	62	64	60	97	94	96	N	N	10	7	O.	O.	.19
W. 20	29.98	66	72	61	94	90	92	S	S W	6	9	O.	O.	T.
T. . 21	29.95	67	76	58	84	64	74	N W	S W	6	9	F.	C.	0
F. . 22	29.86	70	81	59	79	59	69	W	S W	11	8	C.	C.	0
S. . 23	29.89	62	72	53	67	57	62	W	N W	12	7	C.	C.	0
Sep.	30.03		71	58			81							.22

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. Sep. Means for the week.

SOCIETY NOTICES.

THE AMERICAN ACADEMY OF MEDICINE.—The thirtieth annual meeting of the American Academy of Medicine will be held at the Assembly Hall of the Northwestern University Building, corner of Lake and Dearborn streets, Chicago, on Thursday and Friday, Nov. 9 and 10, 1905.

THE HARVEY SOCIETY.—The first lecture of the Harvard Society course will be given by Prof. Hans Meyer, of Vienna, at the New York Academy of Medicine on Saturday evening, Oct. 7, 1905, at 8.30 P.M. Subject: "Die Theorie der Narcose." This lecture will be delivered in German.

RECENT DEATHS.

EDWARD FRANCIS GALLIGAN, M.D., M.M.S.S., died in Taunton, Sept. 26, 1905, aged forty-eight years.

ELI AYER CHASE, M.D., M.M.S.S., died in Brockton, Oct. 3, 1905, aged fifty-eight years.

BOOKS AND PAMPHLETS RECEIVED.

Proceedings of the American Medico-Psychological Association at the Sixteenth Annual Meeting held in St. Louis, Mo., May 30-June 3, 1904.

Linfangivendotelioma della vaginale. Per il Dott. Santi Rindone. Napoli. 1905.

Sulla permeabilita della parete intestinale. Ai batterii ricerche sperimentali del Dott. Santi Rindone. Palermo.

Therapeutics: its Principles and Practice. By Horatio C. Wood, M.D., LL.D. Twelfth edition. Thoroughly revised and adapted to the eighth (1905) edition of the United States Pharmacopœia by Horatio C. Wood and Horatio C. Wood, Jr., M.D. Philadelphia and London: J. B. Lippincott Co. 1905.

Twenty-eighth Annual Report of the Board of Health of the State of New Jersey and Report of the Bureau of Vital Statistics. New Jersey. 1905.

The Diagnostics of Internal Medicine. A Clinical Treatise upon the Recognised Principles of Medical Diagnosis, prepared for the Use of Students and Practitioners of Medicine. By Glentworth Reeve Butler, Sc.D., M.D. Second revised edition. Illustrated. New York and London: D. Appleton & Co. 1905.

Diseases of the Anus and Rectum. By D. H. Goodsall, F.R.C.S. (Eng.), and W. Ernest Miles, F.R.C.S. (Eng.) In two parts. Part II. Illustrated. London, New York and Bombay: Longmans, Green & Co. 1905.

The Patrick Case. By Clark Bell, Esq., LL.D. Reprint.

Original Articles.

ON THE DIAGNOSIS OF CANCER AND ULCER OF THE STOMACH BY THE USE OF EXPERT METHODS OF CLINICAL PROCEDURE.*

BY HENRY P. HEWES, M.D.,
Physician to Out-Patients, Massachusetts General Hospital, Boston.

THE pathology of the stomach presents to the student of internal medicine a most favorable field for the accomplishment of thorough and accurate clinical diagnosis.

This is due chiefly to the fact that we possess for dealing with this class of cases, besides the aids to diagnosis common to all diseased conditions, the subjective symptomology and external physical examination, a further aid in certain clinical methods of investigation which provide us with definite objective signs or findings of much value in connection with the understanding of the condition.

I refer particularly to those means of examination obtained through the use of the stomach tube, the chemical and physical examination of the contents, and examination of the motor capacity and the size and location of the organ.

I have, during the last ten years, been making a special study of these more useful objective methods of diagnosis of stomach disorders in connection with clinical work in order to determine for myself their value as aids to diagnosis and treatment.

These researches include such subjects as the study of the chemistry of the stomach contents in a number of healthy individuals, and in a series of cases of various stomach disorders, the study of the physical and chemical character of the contents of the fasting stomach, the investigation of the size and location of the stomach in normal individuals, etc.[1]

By such work it has been possible in the first place to obtain a set of records of the characteristics of the normal stomach as studied by these methods for comparative use as a standard in the study of pathological cases; and in the second place to establish an association of certain definite abnormal findings or combinations of findings with certain definite pathological conditions of the stomach, a result which has greatly facilitated the understanding and the diagnosis of such conditions.

In this work there has, however, been until within a very recent period the difficulty that as few of the disorders treated came to operation or were fatal within a short period it was in a great number of cases impossible to verify the clinical diagnosis by a pathological one and thus to obtain in the majority of cases investigated a control test of the accuracy of this clinical diagnosis.

I have recently, however, had the opportunity of conducting a series of observations with these special methods of research upon a considerable number of cases of stomach disorder which came later to surgical operation. These, together with such cases as have come to autopsy or in which absolute diagnosis has been established by other means, have given me at the present time a considerable series of observations in which it has been possible to determine absolutely the actual pathological finding associated with the definite clinical finding in each case.

The records of these cases, therefore, offer a very favorable opportunity for determining and demonstrating by a scientific or experimental method the actual significance of the various findings obtained by clinical methods and the value of these methods for diagnosis.

And I wish to-night to present to you these records and a review of the indications for diagnosis which can be drawn from them as a contribution to the study of the diagnosis of the diseases of the stomach.

These cases which came to operation or autopsy were practically all cases of ulcer or cancer of the stomach, or, in rare instances, of insufficient drainage of the stomach from other causes, or cases in which one of these conditions mentioned was suspected, for the reason that it is only in this class of cases that surgical operation is useful as a remedy or that death is a common sequence of the disease.

The work therefore amounts to an experimental study of the subject of the diagnosis of the conditions of ulcer and cancer of the stomach by modern clinical methods of observation with special reference to the indications obtained by the use of those particular methods of observation specially adapted to the study of the stomach, that is, a study in which the value of the indications offered by the clinical findings obtained by the application of the special methods of observation known to students of stomach phenomena in regard to the diagnosis of these particular diseases is proven or tested by the control tests offered in the actual pathological findings obtained by operation or post mortem.

As a preface to the record of investigation I give a brief review of the methods and points of clinical observation which have proven in my experience of special value in connection with the diagnosis of these special diseased conditions which are the object of this study.

The objective findings determined by the use of special methods of stomach examination which are of particular value in connection with the diagnosis of cancer and ulcer are:

1. The finding of the existence of *chronic* stasis in the stomach.
2. The finding of evidence of the presence of bleeding in the stomach.
3. The finding of the presence or absence of free hydrochloric acid, or of lactic acid, in the contents.
4. The finding in the sediment of the contents of fragments of cancer, pus, or numerous or special forms of low organism, as sarcinæ, various bacteria, or yeast fungi.
5. The finding in regard to the size and location of the stomach as studied by inflation of the organ.

* From the Clinic of the Massachusetts General Hospital, Boston. Read at the Boston Medical Library, March, 1905.

The importance of stasis as a sign in connection with the question of the existence of ulcer or cancer lies in the fact that since the commonest cause of insufficient drainage is obstruction of the pylorus from one of these two lesions the presence of stasis is always one suggestion towards the existence of ulcer or cancer in the case.[2] Stasis may be due to other chronic affections as atonic dilatation, ptosis, or obstructions from the adhesions, and hence its existence is in no way pathognomonic of cancer or ulcer. The more opportunity we have, however, to determine the pathology of chronic stasis, the more the frequency of the existence of an old cicatrix or a neoplasm, and in proportion the rarity of simple dilatation as causes of the stasis are impressed upon us.

How frequently ulcer or cancer at the pylorus *may be* a cause of stasis in a run of cases, can be judged from my own records. Here in 21 cases of stasis, which came to operation or post mortem, the cause of the condition was found to be: in 10 cases ulcer at the pylorus, in 10 cases cancer at the pylorus, in 1 case adhesions about the pylorus. Diagnosis was made in all these cases by the method of examination of the fasting contents here described. That is, they were all cases of twelve-hour stasis.

This frequency of association found in my records is probably exceptional. There happened to be no cases of simple atonic dilatation in this series. Yet they represent a set of unselected cases, operation having been advised in all instances in the clinic where chronic stasis was found, excepting, of course, inoperable cases of cancer.

From such results we are certainly justified in saying that the finding of stasis in any case of stomach disorder is in itself a very suggestive point in connection with the possibility of the existence of ulcer or cancer at the pylorus. When this sign is taken in connection with other findings, as the size and location of the stomach, the presence of blood, an anemic condition of the patient, etc., it frequently confirms the diagnosis of cancer or ulcer.

The absence of stasis in a case has no bearing on the question of the existence of ulcer or cancer in the stomach except that it gives an argument against the presence of either of these lesions located at the pylorus.

According to my experience cancer or ulcer elsewhere than at or near the pylorus apparently has no demonstrable influence of a permanent character on the general motor capacity of the stomach, or at all events no such influence as would cause retention of food for twelve hours.[3] Thus among the 18 cases of stomach disorder showing no stasis which came to operation in my series there were 3 cases of ulcer and 10 cases of cancer. I do not mean by my statements to imply that stasis or even twelve-hour stasis is never caused by cancer or ulcer situated elsewhere than at the pylorus.

Strauss has reported cases of cancer in which such signs of stasis as the presence of abnormal fermentation or of abnormal numbers of organized ferments were found unassociated with evidence of disturbance of general motility, that is, of retention of food.

From these cases it appears that local retention of organized ferments in the rough surfaces of a neoplasm may occur while the mass of stomach contents finds its way without hindrance into the duodenum.[3]

The most satisfactory method for the determination of the existence or non-existence of stasis in a given case consists of the obtaining and examining of the contents of the so-called fasting stomach, that is, the contents obtained at a period when if motor conditions are normal all substances ingested at previous meals should have passed out of the stomach. It is true that the diagnosis of stasis may be made in other ways, as by the finding in any contents or vomitus of food of meals of a previous day, or of sarcinæ. These methods though useful when they work are, however, by no means as thorough or as accurate for all cases as the study of the fasting stomach.

The standard period adopted for this test in my investigation was one at least twelve hours after the ingestion of the food or material of any kind. As the average time of the stomach for emptying itself after a full meal, a Leube dinner, is seven hours,[4] this twelve-hour period is long enough beyond the normal limit to allow for normal variation and idiosyncrasy and to show an undoubted disturbance of motor capacity; lesser degrees of stasis represented by a retention of food for 8, 9, or 10 hours may be overlooked by this method. The condition can therefore be excluded only by study of the contents at any period over seven hours after feeding. The twelve-hour period is, however, the most practical one for the initial experiment in routine chemical work.

The findings in the fasting contents which are indicative of stasis are (1) the presence of an abnormal food residue and (2) the presence of abnormal fermentation in the stomach.

The first evidence, which is the most constant, is determined by simple inspection of the contents. Contents of the stomach in conditions unassociated with stasis contain no food elements other than an occasional starch granule or other fragment recognizable under the microscope. A macroscopic food residue, or a thick sediment proven by microscopic examination to be made up of food, means insufficient drainage.

The second evidence, abnormal fermentation, may be discovered by one of three tests; these are:

1. Examination of the sediment for the presence of numbers of sarcinæ ventriculæ.
2. The test for lactic acid in the fasting contents.
3. The test for yeast fermentation.

A full description of the method of the determination of stasis with details of these tests for food residue can be found in my article on the diagnosis of gastrectasis. (Journal, Vol. clii, No. 24.)

The second objective finding, which is of special

value in connection with the diagnosis of cancer or ulcer, is the finding of bleeding in the stomach. Bleeding in the stomach may occur, according to the results of research upon the subject at present in our possession, as an associate of the following gastric diseases tabulated in the order of the frequency of bleeding in each: Cancer, stenosing gastritis from all causes, ulcer, acute gastritis from certain irritants, among them alcohol (Ewald), acute spastic pyloric stenosis, polyposis ventriculi (Clemm), gastric erosion (Einhorn). It does not occur in chronic gastritis of either the hypo-acid or hyper-acid type, in nervous affections, hyperchlorhydria, or simply hypersecretion, or simple ectasia.[4](a) Of the conditions in which bleeding may be found the last two, polyposis, and erosion, are very rare conditions, too rare to count statistically in a differential diagnosis based on the blood finding alone. For purposes of differential diagnosis therefore, we have to consider in any case of stomach disorder, when bleeding in the stomach is proven, either (1) some acute affection or (2) one of three chronic affections. The acute condition can be ruled in or out by the proper study of the case. If it is present the bleeding may be due to any one of the various conditions described, either acute or chronic. If an acute condition is absent the bleeding indicates one of the three chronic conditions, cancer or ulcer or stenosing gastritis.[5]

From this summary of our knowledge on the subject it is clear, I think, that the finding of evidence of bleeding in the stomach in the course of the clinical examination of a case, indicates, if we are dealing with a chronic condition, the existence of a serious stomach affection, either cancer or ulcer, or stenosis of the pylorus from some cause (stenosing gastritis). And since, as I have already indicated in this article, the third condition, stenosis, with its secondary gastritis, is in the great majority of cases due to cancer or ulcer, the blood-finding in the great majority of cases means one of these two affections.[5]

This is the clinical indication of a blood-finding in either the gastric contents or the feces, which is proven by the use of a proper method of research to have as its cause a disease of the stomach.

The methods of determining the existence of bleeding in the stomach are two in number: (1) The examination of the stomach contents. (2) The examination of the feces.

Blood may appear in the fasting contents either as fresh blood or clots, recognizable to the eye, or as a dark sediment of changed blood (coffee grounds), or it may be so thoroughly mixed with the contents as to give them no color or abnormal character, the so-called "occult bleeding."[7]

The presence of fresh blood is determined by inspection.

The presence of changed blood (coffee grounds) or of blood in solution, "occult bleeding," is determined by the chemical test.

The best blood test for practical work is the guaiac test of van Deen modified by Weber.[8] It is performed as follows:

Five to ten cubic centimeters of the contents are acidified with one-third their quantity of glacial acetic acid and the mixture skaken with 5 cc. of ether. 1 to 2 cc. of the ether with its extract is then drained off and added to an equal quantity of a freshly made solution of gum guaiac in alcohol. To this mixture a little hydrogen peroxide or twenty drops of old oil of turpentine are added and if blood be present a deep blue color soon appears. The guaiac solution should be made from the yellow parts of the gum and should be tested with the peroxide before using.[9] The addition of water and chloroform after the above procedure increases the delicacy of the test.

Before concluding in a case of a blood-finding in a contents that it is evidence of bleeding from a stomach disease, we must first, by a proper method or study, exclude as a cause of the blood: (1) All outside sources as the mouth or throat or lungs.[25] (2) Bleeding of the mouth or esophagus or stomach by the passage of the tube.[26] (3) The presence of blood-containing substance as uncooked meat or fish.[6] (4) The presence of certain general diseases which may cause bleeding in the stomach as cirrhosis of the liver, purpuric diseases, pernicious anemia, gallstones, jaundice, tubercular peritonitis in infants. If we can exclude these possible sources for our blood, and also the presence of an acute stomach affection, a blood-finding in the fasting or digestion contents as obtained by tube means, in the great majority of cases, cancer or ulcer. If stasis is absent in the case it always means, barring the very rare chronic conditions cited, cancer or ulcer. For stenosing gastritis, the third possibility, always has stasis as an associate.

In the investigation of this subject I have, during the last six months, made a routine examination for the blood in the fasting contents in all cases of stomach disorder which have come under my care. In all, one hundred and sixty cases of various forms of stomach disorder were examined. The tests used were, first, inspection for fresh blood, and second, if no blood were visible to the eye, the guaiac test. The results of this investigation are as follows:

Excluding all cases where blood could be due to the passage of the tube, that is, all cases where small amounts of fresh blood were found with the use of the tube and yet examination of feces at other times showed no blood, and all conditions of acute stomach disorder, a blood-finding was present in 22 cases. All of these cases save one have come to operation or post-mortem examination. The pathological findings in them were, in 15 cases cancer of the stomach, in 6 cases ulcer. One case, diagnosticated cancer, refused operation and was lost to sight. That is, omitting the one case which was not proven, in an examination of 160 cases of stomach disorder a positive or, more properly speaking, a significant blood-finding was present in none of the *chronic* cases excepting those which were

later proven by pathological examination to be conditions of cancer or ulcer of the stomach.

Such a record is certainly significant in connection with the question of the importance of the blood-finding in the contents as an aid to diagnosis. The list of cases with negative blood-findings included, by chemical diagnosis, chronic gastritis, nervous affections, hyperchlorhydria, hypersecretion.

Conditions with a negative finding in which a pathological diagnosis was obtained were, cancer 5 cases, ulcer 5 cases, obstruction from adhesions 1 case, chronic gastritis 2 cases, neurosis 2 cases.

In 18 cases of stenosis from all causes blood was found in 9.

The search for blood in the feces is conducted in the following manner:

A portion of feces is mixed with water; acetic acid is then added and the mixture skaken with ether; emulsion should be overcome by the addition of alcohol. The ether extract is then added to freshly made solution of the guaiac in alcohol and peroxide of hydrogen or old oil of turpentine added. A positive test by this method is not found save in some special disease of the alimentary tract or of the organs entering it. It is absent in the ordinary conditions of diarrhea.[10] (b) (c). The positive value of the test is attested by the fact that 3 grams of blood introduced into the mouth may be recovered by this method in the feces (Joachim.)

This method of examination for evidence of bleeding in the stomach has the difficulty that all other sources of bleeding in the course of the alimentary tract have to be considered and excluded before a diagnosis of stomach bleeding can be made in any case with a positive finding. The method is therefore inferior to the examination of the stomach contents as regards the value of positive findings. On the other hand as regards negative findings it is of greater value. In spite of the chances for error the method is of great service in connection with the study of cases of stomach disease. This value may be summarized as follows:

1. A blood finding in the feces offers, in cases where cancer or ulcer of the stomach are under consideration, evidence or additional evidence, of the existence of one of these lesions.

2. The absence of a blood-finding in the feces offers an argument against the existence of cancer of the stomach.

The subject of the occurrence of bleeding in the various forms of stomach disorder has been carefully investigated by numerous observers both by the examination of the gastric contents and of the feces. The mass of the results on which our knowledge is based was obtained by study of the feces.[10]

According to these results bleeding is a practically constant associate of the following stomach diseases, cancer, stenosing gastritis, polyposis ventriculi. Einhorn (Journal American Medical Association, May 2, 1898) records cases of a condition known as gastric erosion where a blood-finding in the stomach contents is a feature. Boas found blood in repeated examinations in the feces of 65 out of 67 cases of cancer of the stomach. Joachim found blood in 20 out of 21 cases. It is common but intermittent in appearance in ulcer. Joachim found it at times in the feces in 23 out of 28 cases of ulcer. It may occur in acute gastritis from alcohol (Ewald) or other causes, and from acute consecutive spastic pyloric stenosis. It is never found in nervous affections or simple ectasis. It is very rarely if ever found in chronic gastritis according to extended observations of Boas, Schloss, Joachim, Clemm.[10] Kuttner's opinion that it did occur in this affection [11] appears to be overruled by weight of testimony.[12]

The study of the acids of the stomach contents has some value in connection with the diagnosis of cancer and ulcer of the stomach. This value is, however, much more limited than was formerly supposed.

The chief points of the chemical analysis which may have importance in this respect are, (1) the question of the presence and quantity of free hydrochloric acid, and (2) the question of the presence of lactic acid.

It has long been recognized that a diminution in the secretion of the hydrochloric acid of the gastric juice is a common associate of cancer of the stomach. And although exceptions to this rule are not uncommon, it may be definitely stated that such a diminution asindicated by an absence of free HCl, *in the digestive contents obtained one hour after an Ewald test meal*[13], is the rule in cases of cancer of the stomach as we see them in practice, that is, at the stage of development which is present in most cases at the time when diagnosis of cancer is made, or suggested. So that this finding of an absence of free HCl may be given a certain importance in connection with the diagnosis of cancer. This importance is, however, very limited owing to two facts: *the first* that an absence of free HCl is sometimes an associate of conditions other than cancer;[14] *the second* that it is not uncommon to find free HCl in well developed cases of cancer (see cases No. IV, VI, XXXVII in my table). In fact, absence of free HCl is probably only a late symptom of cancer in a great majority of cases where it occurs. These points are well illustrated in the records of my investigation.

In 160 cases, free HCl was absent both in the fasting contents and after the test meal in 19. Of these, 15, all seen at operation or post mortem, were cases of cancer. The others were not operated upon.

Among 20 cases of cancer (pathological diagnosis) free HCl was absent both in the fasting and digesting contents in 15; it was present in the contents (test-meal contents) in 5. Of these six cases 4 were located at the pylorus and 1 was on the lower wall (an early case without metastases). Two of the pylorus cases were developed upon a former ulcer cicatrix. Four of these cases were advanced and showed metastases.

It is clear from this summary that some but a very limited value can be placed on the estimation of free HCl as an aid in the diagnosis of cancer. In this regard we can simply say that, given signs of a serious stomach trouble as stasis, or blood, or other symptoms, an absence of free

HCl after a test meal is a point in favor of cancer, but that the presence of HCl by no means rules out that condition.

Ulcer of the stomach has, as a rule, a plentiful secretion of HCl, in fact an excessive secretion, hyperchlorhydria, is a common associate. Cases of ulcer with no free HCl have been reported. They are, however, very rare.

My records show the following findings on this subject:

In 10 cases of ulcer (pathological diagnosis) free HCl was present both in the fasting and the test meal contents in all. The quantity of free HCl (after the Ewald meal) was normal, (below .14%) in 4; high (over .15%) in 6; excessive (over .2%) in 4.

As between ulcer and cancer therefore we can simply say: (1) An absence of HCl favors the latter. (2) Presence of HCl may go with either, though more common in ulcer. (3) Excess of HCl suggests ulcer.

Lactic acid when present in the contents of the stomach twelve hours after a meal, the so-called fasting contents, is an indication of stasis or stagnation.[15](a) It is in such cases in part, at least the product of abnormal bacterial fermentation processes in the stomach for the development of which the stasis offers an opportunity. This lactic fermentation does not occur in all conditions of stasis but only in those in which the secretion of hydrochloric acid is diminished -- cases in which the contents contain no free HCl or small quantities of the acid.[15] (b)

This combination of stasis and diminished HCl secretion is much more common in cancer than with other conditions. Therefore lactic acid is more common in association with cancer than with other diseases. It may, however, occur where stagnation is due to other conditions.[15] (c) It *does not occur in cancer unassociated with stasis.*[15] (a) These facts in regard to lactic acid are are well illustrated by my cases.

Here in 160 cases lactic acid was present in the *fasting contents* in 7. These were all cases of cancer at the pylorus and showed the combination of stasis and absence of free HCl. Among 20 cases of cancer it was absent in 13, including 3 cases of cancer at the pylorus with plentiful secretion of HCl and 10 cases of cancer unassociated with stenosis. It was absent in all cases of stasis where HCl was present in the fasting contents, the cases of ulcer stenosis. It was absent in all cases of absence of free HCl where stasis was not an associate.

Lactic acid should be looked for in the fasting contents. In a contents after a meal it may be present as ingested acid or as a production from the lactates of the food without pathological significance. The test for lactic acid to be employed in clinical work is the following:

To 5–10 cc. of contents add one drop of concentrated HCl and evaporate to a syrup. To syrup add 5 cc. of ether and shake. Drain off the ether and add it to a colorless solution of ferric chloride.[15]

The study of the sediment of the contents or washing from the stomach may give valuable information in regard to the diagnosis of ulcer or cancer.

In some cases fragments of tissue which when hardened and examined in section proved to be cancer have been found. Such a finding is of course diagnostic.[16]

The finding of isolated cells resembling cancer cells may be suggestive, but in my experience diagnosis by such findings is precarious. I have known several mistaken diagnoses which have been made in this way.

The findings of a sediment of pure pus in the fasting stomach is said by some observers (Strauss, Boas) to be suggestive of cancer.[17] I have made this finding in two cases. One proved to be cancer. (See case XIII.) The other was not operated upon.

The study of the bacteriology or of the lower organisms of the sediment is often of value particularly in connection with other findings.[18] As already stated bacteria are present in any contents. In my experience they are few in number in contents containing free HCl whether the contents be taken from the fasting stomach or after a meal. In cases containing no free HCl they may be fairly numerous in the fasting contents even in the normal or in conditions where neither stasis nor cancer exists. In conditions of stasis where no free HCl is present they are very numerous, forming a marked contrast to the picture found in any condition where no stasis is present, barring only the presence of active suppuration in the stomach, and a diagnosis of stasis with diminished hydrochloric can often be made in a given case by this finding alone. As such a combination is more commonly an associate of cancer than of any other condition the finding in a given case may serve as one suggestion towards this diagnosis.

Yeast fungi are present in the normal contents.[19] Their number is, however, small even in the fasting contents and they do not appear as actively budding. In conditions of stasis, however, particularly in stasis contents containing plenty of free HCl, large numbers of actively budding yeast fungi are often present in marked contrast with normal conditions, or conditions of stasis contents without free HCl.[20]

A diagnosis of stasis with free HCl can often be made by this finding alone. Such a combination being more common in cases where the stasis is due to ulce. or simply dilatation, than in malignant condition. This finding in a case is a point in favor of these against cancer.

The finding of sarcinæ[21] in numbers in the contents is already stated a sign of stasis, and as such is useful in connection with the further diagnosis of cancer or ulcer. As a rule, this organism goes with stasis with a plentiful supply of HCl and is associated with conditions of so-called benign stenosis, ulcer or simply dilatation as contrasted with cancer.[22] I have found them, however, as well as free HCl, in cancer stenosis. (See cases IV, XXXVII.)

The finding of the large bacillus known as the

Oppler-Boas bacillus in the contents is not, in my experience, distinctive. I have found it in several fasting contents where no stasis or cancer existed. When present in large numbers it has the same significance that a finding of large numbers of any bacteria has; that is, it shows stasis with fermentation.[23]

The study of the size and location of the stomach by the special clinical method of inflation of the organ with air has this bearing upon the diagnosis of cancer or ulcer, that we are enabled through the possession of these findings to rule in or out the existence of dilatation or ptosis of the stomach in considering the differential diagnosis of the case.

The mere existence of a large stomach or of ptosis has, in my experience, no great significance unless it have associated with it an evidence that the motor function of the organ is disturbed, *i.e.*, the presence of stasis. If stasis is present, however, the findings in regard to the size or location of the organ at once assumes importance, for it then becomes a question whether the stasis may be accounted for by simple atonic dilatation or by ptosis, or whether its cause must be sought in cancer or ulcer, or some other cause obstructing the pylorus. If, therefore we have stasis in a case, and an absence of dilatation of appreciable extent, or of ptosis, the indications are practically absolute in favor of cancer or ulcer at the pylorus or of the rare condition of obstruction from other cause, as adhesions. If in stasis we find marked dilitation or ptosis we have to consider these conditions as possible causes of the stasis.[24]

If I were to go by my experience alone, as far as it consists of a study of cases where the actual abnormality present was determined by pathological examination, and such cases are the only ones upon which it is justifiable to form an opinion, I should conclude that the cause of chronic gastrecstasis, as determined by the method of investigation used in this work, that is, a twelve-hour gastrecstasis, was always an obstruction of the pylorus from some cause. For, as you will recall, such a condition was present in all my cases of stasis (see page 404 also Note 1), both those with stomachs of normal size, and those with greatly dilated stomachs.

That is, my results would lead me to expect the existence of an old cicatrix of ulcer in the majority of cases of dilatation of the stomach of long standing, which, as far as clinical evidence goes, are often classed as cases of atonic dilatation.

It is, however, an undoubted fact that conditions of stasis due to simple dilatation and atony or to ptosis of the stomach without any obstruction of the pylorus, past or present, do exist. And it is quite possible that these conditions may cause a twelve-hour stasis such as was present in my cases. So that we must consider this possibility in chronic stasis where dilatation or ptosis are associates, remembering, however, that the condition from this cause, as compared with obstruction, is rare. In fact, the results of my pathological findings have led me to make the clinical diagnosis of obstruction from ulcer or other cause in the majority of cases, even where no clinical evidence of ulcer exists, simply on the statistical chances.

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[2] It is understood that I am speaking here of chronic stasis. Temporary conditions of stasis such as occur in acute affections, in acute gastritis or acute spastic stenosis are, of course, to be excluded.

[3] Stasis is, as a rule, the result of a disturbance of the motor function of the stomach as a whole, so that a part of the ingested food does not pass the pylorus owing either to obstruction of this orifice or to weakness of the muscular power of the walls of the stomach. It may, however, be the result of a neoplasm of the wall which holds some substances as bacteria in its surface while the food and mass of contents go on.

Vid. Strauss: Zeitschr. f. klin. Med., vols. xxvi and xxvii.

Deutsch med. Woch., 1890, No. 38, Supplement.

A food residue means general motor disturbance. A fermentation test *without food residue* means some local stagnation.

[4] Leube: Deutsch. Archiv. f. klin. Med., vol. xxxiii.

[5] Boas states that blood is present in the feces in practically all cases of stenosis with secondary gastritis. In the stomach contents no such constancy is found. Thus my records show four cases of stenosis from cancer and four from ulcer cicatrix which gave no blood finding.

[6] Blood caused by the passage of the tube is fresh blood and, as a rule, appears in part floating in mucous or saliva. The use of a very soft tube with a closed rounded end will lessen the chance of this artificial production of blood.

[7] Boas: Deutsch. med. Wochenschr., 1901, No. 20, S, 315.

[8] Weber: Berl. klin. Wochenschr., 1893, No. 19.

[9] The criticisms of the original Guaiac test, that it reacted to substances other than blood, do not apply to this modified test, as the ether does not take up these substances. After all no better evidence of its accuracy is needed than that offered by my experience of its routine use in stomach cases with negative results in all save those of cancer and ulcer.

[10] (*a*) Boas: Uber occulte Magen Blutlungen. Deutsch. med. Wochenschr, No. 20, 1901.

Uber d. Diagnosis d. Ulcus Ventriculi. Deutsch. med. Wochenschr., No. 47, 1903.

Beitrage zur Kenntniss der Magen carcinoma Bluten.

Arch. f. Verdauungs Krankheiten, Bd. vii, S 413.

(*b*) Joachim: Berl. klin. Wochenschr., 1904, xii, S 466.

Seloss: Archiv. f. Verdauungs Krankheiten, Bd. x, H. 3, S 257.

(*c*) Clemm: Archiv. f. Verdauungs Krankheiten, Bd. x, H. 4, S 373.

(*d*) Hartmann: Archiv. f. Verdauungs Krankheiten, Bd. x, No. 1, S 48.

Schmiliusky; Munch. med. Wochenschr., 1903, No. 49.

[11] Kuttner: Zeitschr. für klin. Med., Bd. 45.

[12] Schloss: Archiv. f. Verdauungs Krankheiten, Bd. x, H. 3.

[13] The presence or absence or of the quantity of free HCl is best determined in a contents obtained after a test meal, for example, a contents expressed one hour after an Ewald breakfast. Absence of free HCl in a fasting contents may occur in normal individuals (See records in "The Diagnosis of Gastrecstasis," BOSTON MEDICAL AND SURGICAL JOURNAL, vol. cliii, No. 24), or in conditions of disease when a plentiful supply is present under the stimulation of food. (See Cases XXIV, XXXIV, III, VIII, in table.) The presence of free HCl in a fasting contents is sufficient evidence of the presence of a secretion and obviates the necessity of the test meal estimate.

[14] In a research made in 1899 upon stomach disorders, I found the absence of free HCl a characteristic of 24 cases, none of which at the time showed any special evidence of cancer. I have records of 16 of these cases up to date and no one of these has developed any further evidence of cancer in the interval. BOSTON MEDICAL AND SURGICAL JOURNAL, May 17, 1900.

[15] De Jong: Accher f. Verdauungs Krankheiten, Bd. II, H 1, S 59. Records in regard to lactic acid are of doubtful value unless obtained by such an accurate method of testing. The regular Uffelman test without the addition of HCl and solution in ether cannot be depended upon.

(*a*) Stagnation of some kind is essential for lactic acid formation by fermentation in the stomach. As a rule, the presence of the acid in the fasting contents means actual motor insufficiency — most commonly stenosis from cancer. It may occur, however, where the general motor function is preserved but where a stagnation of bacteria is accomplished through the harboring of these organisms in the folds and rough surfaces of a neoplasm. Strauss: Zeit. f. klin. Med., vols. xxvi, xxvii, reports such cases — all cases of cancer. It does not occur in all cases of cancer, however, as demonstrated by my records; (*Vid.* also Klemperer: Deutsch. med. Wochenschrift, 1895, No. 14), but only if the cancer happens to cause stagnation either by stenosis or by its rough surfaces.

(*b*) Lactic acid fermentation does not occur in the presence of an acidity of .12% total HCl (not free HCl). Strauss: Zeit. f. klin. Med., vol. xxviii.

Lactic acid, though the rule in cases of stasis associated with diminution of HCl is for some unexplained reason not always present in such cases. Boas: Zeit. f. klin. Med., vol. xxv, Nos. 3 and 4.

(*c*) Lactic acid may be present in conditions other than cancer, provided that stagnation associated with diminution of HCl secretion is present. Bial (Berl. klin. Woch., 1895, No. 6) reports a case of ulcer at the pylorus where HCl was absent and lactic acid present.

Rosenheim: Deutsch. med. Woch., 1893, No. 15, reports similar cases.

[16] Hemmeter: Diseases of the Stomach, page 526.

[17] Strauss: Berl. klin. Woch., 1899, No. 40.

[18] Umkowski: Mitt. aus der med. Klinik zu Königsberg, Leipzig, 1888.

[19] Strauss: Zeit. f. klin. Med., vol. xxvii, p. 70.

[20] *Vid.*, Results of the Study of the Vital Content of 180 fasting contents in article on "Gastrectasis," this JOURNAL, vol. cliii, No. 24.

[21] Oppler: Munch. med. Woch., 1894, No. 29.

[22] Riegel: In "Diseases of the Stomach," Nothnagel series, states that sarcinæ are of great rarity in cancer. Oppler says the same. The rarity has, however, nothing to do with the cancer, but to the fact that conditions favoring their multiplication, the combination of stasis and plenty of free HCl, is rare in cancer.

[23] *Vid.*, Oppler: Zu Kenntniss d. Mageninhalte bei Carcinoma Ventriculo. Deutsch. med. Wochenschrift, 1895, No. 5.

[24] Hypertrophy of the muscular wall of the stomach is common in cases of stenosis. We do not, therefore, in these cases get the same proportionate dilatation as with atony. Also the propulsive power of the stomach is greater in stenosis. Extreme dilatation is not, however, uncommon in stenosis.

[25] Joachim found no blood test in the feces of cases of phthisis or pneumonia. Such cases might, however, give a chemical test in the gastric contents. (Joachim, *loc. cit.*, Note 10 *b*.)

[26] Joachim (Note 10 *b*) found that cooked meat ingested by mouth gave no blood test in the feces. Uncooked meat gave a positive test. (See also Hartmann, Note 10 *d*.)

(To be continued.)

A BRIEF CONSIDERATION OF THE SURGICAL TREATMENT OF DISEASES OF THE STOMACH.*

BY JOHN T. BOTTOMLEY, M.D.,
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THE surgical treatment of diseases of the stomach is altogether too broad a subject to be adequately treated in a talk the length of which is to be measured in minutes. The surgery of the upper abdomen in general, and of the stomach in particular, has shown greater advance in very recent years than that of any other portion of the human anatomy. It is well within the memory of even the youngest of us that surgery began to play an appreciable rôle in the treatment of certain gastric diseases that to-day would be considered ill-treated, if not surgically treated.

Gastric ulcer, its complications and sequelæ, and gastric cancer comprise the great bulk of stomach diseases; in general, their treatment is gradually passing from the province of medicine to that of surgery. So far has the transition progressed that to-day medical therapy holds no place in the treatment of gastric cancer, a very limited one in that of the complications of gastric ulcer and a diminishing one in that of gastric ulcer itself. We believe that this is justly so; for to the patient with gastric cancer the internist offers neither relief nor cure; the surgeon, almost always relief, occasionally cure; in many simple gastric ulcers, in practically all chronic gastric ulcers, the internist offers at best a slow, uncertain progress towards cure and often not even that; the surgeon, in the majority of cases, a speedy, definite cure. All this does not mean that medical treatment has no place whatever in the therapy of gastric diseases; we are not rash enough to think that every gastric ulcer should undergo operation nor do we believe that gastric symptoms of nervous origin will be relieved by surgery. A large proportion of simple gastric ulcers, the type usually seen in chlorotic young women, should be treated medically and will recover under proper medical treatment. We do not agree with the extremists who claim that 90% of such cases recover, but we *do believe* that 40% to 50% recover permanently under medical treatment only. It is in the complications and sequelæ of the simple ulcer, in the chronic ulcer, in the lesions secondary to ulcer that surgery claims and finds its field; in the cases where, to quote Mayo, "the mechanics of the stomach are usually at fault, not the chemics," where the cause of the symptoms is mechanical and where, consequently, the relief must come through mechanical or, in other words, surgical means.

We believe that a surgeon should be asked to see a gastric case:

(1) Just as soon as there is even a suspicion of cancer; in this regard it is well to remember that Osler and McRae have shown that after the age of thirty gastric cancer is sufficiently frequent to demand consideration in any chronic gastric trouble; to recollect that the chemical and microscopical tests are notoriously deficient and uncertain, especially in the early diagnosis of cancer; and that early diagnosis is the important factor because the chance of cure in gastric cancer is in very direct proportion to the stage of its development when operated on.

(2) In a case of supposed acute gastric ulcer just as soon as a reasonably long course of medical treatment has failed to give a very definite improvement; namely, after five to eight weeks.

(3) Just as soon as there is doubt in the diagnosis of any gastric case. Many a case of supposed stomach disease has, upon operation, proved to be disease of the gall bladder, gall ducts, duodenum or pancreas. Diagnosis was impossible before operation; in surgery lay the only means of diagnosis, the only measure of relief.

(4) In all chronic gastric ulcers.

(5) In all complications and sequelæ of both acute and chronic gastric ulcers.

In this brief paper we shall offer nothing new, but simply recall to you what you have already known. We shall speak of the technical methods we have found most useful in our stomach work, of a few anatomical points that bear a relation to such work and of the results in a series of cases which have been operated upon for the most part at the Carney Hsopital by my colleague, Dr. Munro, and myself. The methods have been developed by the thought and labors of Mikuliez, Kocher, Robson, Moynihan, the Mayos and others to whom we now make due acknowledgment.

Anatomical points. — Normally the pylorus lies at about the level of the first lumbar vertebra or between it and the second. It will usually allow the thumb and first finger to easily meet through it, the one invaginating the anterior stomach wall, the other the duodenum.

The duodeno-jejunal flexure lies to the left of the spinal column, below the under surface of the pancreas, opposite the first or second lumbar vertebra and consequently considerably

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above the lower border of the normal stomach. It is a fixed portion of the intestine, being held in position by a thin band of unstriped muscle fibers — the suspensory muscle of the duodenum or the ligament of Treitz.

Blood vessels. — Along the lesser curvature of the stomach, between the layers of the lesser omentum, passes the gastric or coronary artery, a branch of the celiac axis, running from the cardia towards the pylorus and meeting the superior pyloric artery, a branch of the hepatic, which runs from the pylorus towards the cardia. Along the greater curvature, between the layers of the greater omentum runs the left gastro-epiploic artery, — a branch of the splenic, — passing from left to right and anastomosing with the right gastro-epiploic artery, a branch of the gastroduodenal, running in the opposite direction. The gastroduodenal, a branch of the hepatic, runs down behind the pylorus. These vessels supply all the stomach except the dome or fundus which is nourished rather independently by branches from the gastric and by the vasa brevia from the splenic artery.

Lymphatic system. — For our knowledge of this most important system we are chiefly indebted to the labors of Cunéo, Porier and Hartmann.

The most important group of glands surgically is the group in the lesser omentum, situated in or very close to the lesser curvature, following in a general way the course of the gastric artery and draining the most important surgical areas of the stomach. Here the lymphatic current is, for the most part, from right to left.

Lying in the greater omentum usually subjacent to the right gastro-epiploic vessels and at a short distance from the stomach is another group of glands which drains the inferior portion of the stomach and is continuous with and drains into the retro-pyloric group surrounding the gastroduodenal artery behind the pylorus. The lymphatic current here is from right to left. All the gastric lymphatics ultimately empty into the plexus about the celiac axis.

Glands are "rare" in the middle portion of the greater curvature and "quite exceptional" in the fundus which really has an independent system draining into the splenic chain.

The glands of the greater curvature are not invaded in the early progress of pyloric cancer.

This very brief résumé of the vascular and lymphatic anatomy of the stomach is helpful in understanding the principle of the radical operation for pyloric cancer.

Gastric cancer. — Just what operation is to be performed in a given case of gastric cancer will depend entirely on the location and extent of the disease. Malignant disease of the stomach, according to Moynihan, usually begins near the pylorus just below the lesser curvature. In Mayo's experience, 60% of gastric cancers have their origin at the pylorus or within three inches of it and 70% involve the pyloric portion. The direction of growth is almost always towards the cardia and the curvatures (more especially the lesser curvature). Growth in the direction of the duodenum and origin in the duodenum is rare. In over 50 cases of gastric cancer we found evidences of origin in the duodenum or of spreading in that direction in only two. Primary cancer of the greater curvature is rare (2.8% of all cases).

If a growth anywhere in the stomach wall is sufficiently well localized to permit of that portion of the stomach being excised and of a suture of the divided surfaces of the stomach, excision and suture is the proper operative procedure.

If the cardia is the chief seat of the disease, the mechanical difficulty, if any, will be not with the exit of food from the stomach, but rather with its ingress. The indication is usually for a gastrostomy — the formation of a permanent gastric fistula. Witzel's method is too well and favorably known to require description here.

If the disease is fairly general in the stomach, too extensive for a radical operation, then one of two procedures may be available. If there is a properly situated portion of the gastric wall sufficiently large and free from the disease, anterior gastro-enterostomy may be done rapidly by means of a Murphy button or McGraw ligature. Such a procedure will usually not only prolong life, but will make it far more endurable; it drains the stomach of its foul, putrescent contents and does away with the constant absorption of septic material; the improvement following such a procedure may be sufficiently great to allow of a radical operation later. Robson has had several such cases. If operative procedure on the stomach is impossible and starvation threatens the patient, a jejunostomy can be done much after the manner of Witzel's gastrostomy and the patient fed through the jejunum.

In some cases it seems wise to do nothing after the abdomen has been opened. Adhesions *et cetera* may make any operative procedure impossible. In fourteen of our fifty cases of gastric cancer, we have limited the operation to exploratory incision. In the majority of these cases the operation had neither good nor ill effect on the patient.

We have done gastrostomy once and jejunostomy three times in desperate cases. The gastrostomy case lived in comfort for six months after operation, although he had been slowly starving previously. One of the jejunostomy cases obtained sufficient comfort to justify the operation. The other two were operated on too late for even temporary relief.

We have done twenty-five gastro-enterostomies in cases of gastric cancer. In five cases the operation probably hastened death by a few days, but these were the desperate cases who had come to us usually from a distance, in terrible condition, weak, starved and septic.

In the less hopeless cases the results were encouraging. In 19 out of 20 the end result is known. Two lived for over a year, nine lived from one month to a year and nine died within a month after operation. Not a case died as a direct result of the operation. The great major-

ity of these cases received the most marked benefit from the operation; they are in bed for only four to five days; their improvement is immediate and they are grateful for relief from pain and starvation. Some of them go to work again. Medical treatment offers this class of cases absolutely no relief. The surgeon can and does make their existence comfortable, even if he cannot cure them.

If the cancer is limited to the pylorus or to the pyloric region and its neighborhood, a radical operation is usually possible.. What cases are suitable or not suitable the surgeon must decide after the abdomen has been opened. No one can tell the condition of the viscera without opening the abdomen and one not infrequently is astounded at operative revelations. Even marked glandular involvement is sometimes not a contra-indication to operation; there will always be some glandular involvement in gastric cancer, though it must be borne in mind that all enlarged glands in cancer cases are not necessarily cancer-infected. Many of them are purely inflammatory. Extensive adhesions are the chief contra-indication and they add greatly to the danger of operation. Haberkant (quoted by Mayo) reports a mortality of over 72% in cases much complicated by adhesions against 27% in cases not complicated in this respect. This fact of itself is a strong argument for early operation.

The present radical operation is based on anatomical principles, is practically bloodless and is followed by remarkably little shock. It has been developed chiefly through the labors of Hartmann, Moynihan and the Mayos. The chief anatomic data have already been placed before you.

Mayo's recapitulation of the steps of the operation is so clear and concise that I make free use of it here. Not counting the necessary opening and closing of the abdomen, he divides the operation into four stages:

(1) "Double ligate and divide the gastric artery." This is done close to the point where it joins the lesser curvature, usually about one inch from the esophagus. "Ligate and divide the gastrohepatic omentum close to the liver, leaving most of it attached to the stomach for removal with the stomach." This step insures the removal of the most important group of glands. "Double ligate and divide the superior pyloric artery and free the upper inch or more of the duodenum."

(2) "With the fingers as a guide behind the pylorus, in the lesser cavity of the peritoneum, ligate the gastroduodenal or its branch, the right gastro-epiploic artery, and progressively tie and cut away the gastro-colic omentum distal to the glands and vessels up to the appropriate point on the greater curvature and here ligate the left gastro-epiploic vessels." (This point is about on a line dropped almost vertically from the right border of the esophagus, the so-called "Mikulicz-Hartmann line.")

(3) "Double clamp the duodenum and divide between the clamps with the cautery," that the cut surface may not become infected with cancer. "Leave ¼ in. projecting, with a running catgut-stitch suture through the seared stump. The end of the duodenum is closed as the clamp is removed. A pursestring suture about the duodenum enables the stump to be inverted. The proximal end of the stomach is double-clamped along the Mikulicz-Hartmann line and divided with the cautery leaving ¼ in. projection. Suture through the seared stump with a catgut button-hole suture. This is again turned in after removal of the clamp by a continuous over and over or right-angled Cushing suture."

(4) "Independent gastrojejunostomy." This operation removes not only the pyloric portion of the stomach, but all the glands and lymphatics draining that area. It is a truly radical operation. It leaves only the fundus of the stomach — the dome — "the isolated area" of Moynihan, which really has a blood and lymphatic system of its own. The leaving of this portion has the additional advantage of rendering more easy the necessary gastrojejunostomy. The Mayos have done this operation twelve times since Jan. 1, without a death and have had but one death in the last seventeen cases. It is certainly remarkable how little discomfort these patients have after this operation.

We have done eleven pylorectomies or partial gastrectomies. Two of our earliest cases died as the result of poor technique. We know the post-operative history of five of these patients and it is most satisfactory. One was done ten months ago, one eight months ago, one about two months ago and one very recently. All are doing well.

An opportunity of operating early is the great desideratum in gastric cancer. When the diagnosis can be absolutely made, it is often too late for radical cure. Exploratory operation is certainly not dangerous to the ordinary individual. It can do no harm; it may result in the saving of life.

Gastric ulcer. — The relation of surgery to acute hemorrhage from the stomach we shall not discuss, nor shall we say much of the acute and chronic perforating ulcer. The treatment of the acute perforation is evident; a paper by Lund in a recent number of the BOSTON MEDICAL AND SURGICAL JOURNAL with regard to the treatment of sub-acute perforation is well worth your perusal. Chronic perforating ulcer presents a problem, the operative solution of which may be most difficult in some instances.

At the present time gastro-enterostomy is the surgical measure most used in the treatment of gastric ulcer and its complications, and a brief résumé of its technique will be given. The question of an anterior or posterior operation, of a long or short loop of jejunum and of the use of mechanical aids to the operation will not be discussed. We shall limit ourselves to speaking of the method or methods which we have found most satisfactory.

The technique of the Moynihan method of

gastro-enterostomy is not very difficult. The abdominal incision should be sufficiently large to give free access to the field and to admit of a very thorough digital exploration of the whole abdominal cavity, but particularly of the gall bladder and ducts, pancreas, duodenum and other viscera of the upper abdomen. The incision is usually in the median line, but may be to the right or left. After a thorough examination, a gastro-enterostomy having been determined upon, the greater omentum, stomach and transverse colon are lifted out of the abdominal cavity and turned upward on the external abdominal wall. An incision at right angles to its long axis is then made in the under side of the transverse meso-colon against the other side of which the posterior wall of the stomach is held. A short incision is made with a knife and enlarged to about four inches by tearing with the fingers. A place free of blood vessels should be selected for the incision and care should be taken to avoid the colic vessel which is readily seen. It should be remembered that the meso-colon is comparatively thin and that a careless incision through it may injure the posterior stomach wall. Sufficient of the posterior wall is pushed through the slit in the meso-colon to allow a fold of it to be grasped by clamps four inches long protected by rubber tubing. The clamp is applied obliquely from above downward and from left to right, and so placed on the stomach that the anastomotic opening will come at its lowest point. The beginning of the jejunum is then found and a clamp is so placed on the anterior jejunal wall, that, when the anastomosis has been completed, the proximal portion of the jejunum will be really taut; in other words, the anastomosis is made as closely as possible to the beginning of the jejunum. The clamps are then placed side by side, a wick being carried behind and below them to catch what little ooze there may be. The posterior half of the celloidin sero-serous suture is now laid. An opening 1¼ in. to 2 in. long, parallel to the clamp blades is now made in both the jejunal and gastric fold. The mucous membrane which pouts into the openings is removed with scissors, a very considerable quantity of the gastric mucous membrane being taken, very much less of the jejunal. A through and through suture of chromic catgut including all the layers of both the stomach and jejunum is now carried all the way around the anastomotic opening; the clamps are loosened and the few bleeding points tied. The sero-serous suture is then completed by placing its anterior half. Three or four interrupted celloidin sutures are then taken between the jejunum and the edges of the slit in the meso-colon. In this way the opening in the meso-colon is sufficiently closed to prevent hernia of the small bowel through it and to prevent angulation of the jejunum in the neighborhood of the anastomosis.

Now, as we have already noted, the duodeno-jejunal fold is above the level of the lower border of the stomach, and the anastomosis is at the lowest point of the stomach and at the highest possible point on the jejunum; hence it will be readily seen that there is no proximal loop (in the true sense of the word) of the jejunum, but only a perfectly straight taut limb of jejunum falling from the duodeno-jejunal fold to the anastomotic opening and affording no loop where bile, etc., may find lodgment. Moynihan, Robson and Murphy of Chicago have used this operation or a very similar one for some considerable time and with marked freedom from that former bane of gastro-enterostomies — the vicious circle.

The principle of gastro-enterostomy is that of thorough drainage; its primary effect is to drain the stomach and to give it rest and, as a result, to furnish an opportunity for ulcers to heal, for the gastric muscles to recover their tone, etc.

The mortality of the operation is low and the percentage of fatal results is steadily falling. In 1903, Mayo reported a mortality of 10.1% in 277 cases of gastro-enterostomy for both malignant and benign disease. In benign cases alone his mortality was 6.5%. The mortality to-day in benign cases is much lower than that. Reported mortality cannot be considered the real mortality of the operation; for death usually results not from the operation, but from the weakened, starved condition of the patient when he comes to operation.

We have done 97 gastro-enterostomies for benign conditions. Twelve patients died and this number includes deaths from perforations, congenital stenosis of pylorus, pernicious anemia, tuberculosis and aneurism. Of the patients who recovered, 77% are well, 15% are partly relieved and 8% could not be traced. These percentages do not include 6 patients now in the hospital and doing very well. Many of these patients were operated on during the days when the long loop was considered the best procedure. Several were done by a modified Roux method with most satisfactory results; in fact our results with this modified Roux method have been so thoroughly satisfactory and so immediate that we may adopt it as our routine procedure despite the somewhat longer time required for its performance and the somewhat increased danger of infection because of the necessary complete division of the jejunum. The only objection to this method is that it is somewhat complicated and is a rather long operation. All our recent cases have been done by the method described above in detail and are progressing in a satisfactory way, though in some cases we have been bothered by vomiting for the first few days after the operation.

Shortening of the gastrohepatic ligament for the cure of prolapsed stomachs has proved unsatisfactory in our hands.

Finney of Johns Hopkins has devised an excellent gastroduodenostomy for pyloric obstruction. It is simple of execution and gives a roomy passage from the stomach to the duodenum. There seems to be more hemorrhage in the doing of a Finney than in the performance of a gastro-enterostomy, but the hemorrhage is never enough

to be alarming. Finney and others have reported excellent results. The theoretical objections seem to be that it will not entirely drain a dilated sagging stomach, and that in cases where the ulcers are at or near the pylorus the stomach contents must still pass over the diseased area to reach the intestinal tract. We have done twelve of these operations. The result is known in ten. Four cases are well, four partially relieved and two died. The deaths were due to errors in technique. Our results have not been as satisfactory from the Finney operation as from gastrojejunostomy.

Rodman, of Philadelphia, advocates partial gastrectomy in selected cases of gastric ulcer, cases of multiple chronic ulcers in the neighborhood of the pylorus. Numerous facts drawn from experience give much strength to this proposition. Eighty per cent of gastric ulcers are at or near the pylorus. About the same percentage of gastric cancer is found in the same locality. Sixty per cent of cases with gastric cancer give a history of previously existing gastric ulcer. Even after gastro-enterostomy a few cases of hemorrhage from gastric ulcers and a few cases of perforation have been reported. The operation of partial gastrectomy for benign growths has a very low mortality and the patients do remarkably well after it. It is sometimes quite impossible either by sight or touch to say whether a pyloric mass is inflammatory or malignant. Put together all these facts and we must admit that Rodman's proposition deserves much consideration. Because of the rather common co-existence of duodenal and pyloric ulcers, Rodman removes with the pyloric portion of the stomach the first two or two and a half inches of the duodenum in which portion practically all duodenal ulcers are situated.

In closing we must ask you to remember that gastric surgery is still in its developing stage and that the unfortunate, though none the less necessary, accompaniment of that stage in the surgery of so important an organ as the stomach is always a higher mortality rate, a larger percentage of unsatisfactory results than obtain when the operator becomes more expert, his technique more perfect, his diagnosis more accurate. The history of the operative treatment of appendicitis, of diseases of the gall bladder and of the breast bears out the truth of this statement. The surgeon looks to the general practitioner for aid in his work; the material must come from him; the object of both is the good of the patient, the relief of his suffering. When with the best means at his command the medical man cannot make a diagnosis, when medical treatment has failed to give the desired relief, then surgery with its exploratory laparotomy offers a reasonably certain means of diagnosis with very little danger to the patient, a danger exceedingly small when compared to the value of the knowledge acquired thereby and the opportunity afforded for radical work. We only ask that the proper cases be turned over to the surgeon before an unnecessarily long, useless course of medical treatment has imposed upon both the patient and the surgeon a most serious handicap.

RESECTION OF THE NASAL SEPTUM.

BY LEON E. WHITE, M.D., BOSTON.

Now that resection of the nasal septum is receiving the recognition it so well merits, a review of its development with a brief discussion on the methods of operating may be of general interest.

According to Dr. Sukstorff, to whom I am indebted for considerable of the data in this article, resections have been practiced for more than fifty years. He says that Heylen had done the operation as early as 1847 and gives the following quotation from his article in the *Gazette Médical* of that year, "*Mais le peu d'épaisseur de la muqueuse empêcha de faire la réunion des bords de la plaie.*" In 1859 Chassaignac, after peeling back the mucous membrane, removed enough of the cartilage to permit him to force the deflected portion of the septum over into the median line and then held it in place by a wooden wedge. In 1859 Demarquay, by very radical incisions, made a flap of the external nose and after turning it up and pushing the mucous membrane away from the deflection, he removed it. From a publication by Linhart in 1862 we learn that he was resecting anterior deflections.

As Czermak did not introduce the use of the head mirror until 1858 these early operators worked under great disadvantage. While they probably operated on only anterior deflections, yet to them is due great credit for the good seed sown. Germination was slow, as there is practically no reference to this operation in the literature between 1862 and 1882. In the latter year the operation was revived by Hartmann. His method consisted in pushing back the mucous membrane and the removal of small portions of the deflected bone and cartilage, apparently just enough to allow the septum to be pushed into the median line where it was held by means of thick elastic tubing.

Ingals in 1882 recommended an operation for the correction of anterior cartilaginous deflections which consisted in the resection of a triangular piece of cartilage. He made an incision from above downward and outward through the middle of the mucous membrane covering the triangle which he wished to remove. This mucous membrane was then reflected and an incision made through the anterior and posterior sides of his cartilaginous triangle. This was then seized near the top with forceps, and, after peeling the concave mucosa carefully away, its base was severed. The resiliency of the septum was next overcome by making several incisions through the cartilage, after which it was pressed into the median line and held in place by tampons.

In 1883 Petersen describes his method which is more in accordance with present-day ideas. He made a triangular flap of the mucous membrane on the convex side, which, after the removal of the cartilage, he replaced and sutured.

The introduction of cocaine into rhinology by Jelinek in 1884 was of great advantage to this method of operating, as it made it possible for the operator to do a more painstaking resection, without subjecting the patient to the dangers of long narcosis. The more recent introduction of adrenalin, giving one a bloodless field for operating, has also done much to make the resection method feasible.

Trendelenburg in 1886 after detaching the mucous membrane from both sides of the deflection, removed it with scissors and chisel. Roux and Heyman, in the same year performed a very similar operation. Juracz, in 1891, cut through and elevated the mucous membrane, removed the deflection with knife, scissors and gouge and then sutured the mucous membrane. Other contributions to the literature were made about this time by Botey, Roberts, Malherbe and de Blois.

Krieg in 1898 recommended resection for extreme cases of septum curvature. He advised the making of two incisions, one parallel to the floo. and the other parallel to the bridge of the nose, these to go through the mucous membrane only. The triangular flap thus outlined was pushed back until the entire curved part of the septum was exposed; then the incision was extended through the cartilage itself, with care not to wound the mucous lining on the concave side. The cartilage was then seized with Rongeur forceps and broken off piecemeal. If necessary the removal may extend into the bony septum. Krieg did not attempt to preserve the lining on the convex side, as he claimed that it rolled up and could not be stitched into place. He gave a table of 130 cases showing the value of the operation. Bony involvement was found in over 50% of his cases. Bönninghaus in 1897 reported 19 cases operated on with perfect success by Krieg's method. From these two writers the window resection operation received a great impetus, in fact, the method has become quite commonly known in this country, as the Krieg-Bönninghaus operation.

In the year 1899 Killian recommended resection for both large and small deflections. He advised, at that time, that a slanting or vertical incision should be made through the mucous membrane on the convex side. This was then elevated and the exposed cartilage removed until the mucous membrane on the concave side was reached. The entire deviated portion was then carefully removed with Hartmann's conchotome, care being taken not to injure the concave mucosa. The mucous membrane was then sutured and tampons inserted. These he took out in two or three days. Healing was rapid so that frequently within a week's time the septum presented a nearly normal appearance. In referring to the Hartmann-Petersen operation Killian says that it has great advantage over the more common operation where there is a sacrifice of the mucous membrane, inasmuch as healing takes place with much greater speed. He moreover condemns electrical instruments and wisely says that the hand can much better adapt itself to all conditions and circumstances. He aptly calls electrolysis, homeopathic surgery. He suggests that the concave side can be utilized for the operation, although with considerable difficulty, as in extreme narrowing or stenosis or where there is a purulent discharge on the convex side.

Freer in 1902 and again in 1903 described his operation which consisted in making an inverted T-shaped incision over the prominent portion of the deflection, the pushing of the muco-perichondrium backward and forward, and the removal of the cartilaginous deflection. He devised special knives which greatly facilitated this procedure. To him more than to any other American is due our thanks for bringing this operation before the profession.

Stubbs in 1903 recommended that an incision be made perpendicularly along the entire anterior edge of the triangular cartilage on the convex side, this being facilitated by drawing the fleshy part of the septum sharply to the opposite side. The muco-perichondrium was next separated from both sides of the deflection and then the cartilage was cut out with a pair of Grunwald's alligator scissors or Kraus's fenestrated cutting forceps. The incision could then be sutured or not as suits the operator. He advised that both sides be packed moderately snug.

In 1903 Menzel describes the operation and gives details in 15 cases in which it was used. He makes a single vertical incision through the mucous membrane at the anterior border of the quadrangular cartilage. This he extends backward at either the top or the bottom as the deflection may warrant. Then, he dissects up the mucous membrane and holding it away from the septum with Killian's speculum he removes the cartilage and bone with cutting forceps and chisel.

From the advice given by Menzel to leave two fifths to three fifths of an inch margin on the upper anterior border of the septum, *i. e.*, the portion immediately supporting the bridge and tip of the nose one naturally infers that there have been cases where too extensive resection has been followed by deformity. He moreover states that since observing this precaution he has had no saddle noses. E. Müller also observes the necessity for care on this point. He states that he has had moderate sinking in of the nose, in some cases, explaining this depression on the theory of contraction of the scar tissue. As Müller does the original operation of Krieg, believing it unnecessary to save the mucous membrane on the convex side, he, of course, has a large area of scar tissue which operators avoid who preserve the convex mucosa.

Such operators as Hajek, Weil and Zarniko advise saving the mucous membrane, and do not, as a rule, suture the flap but rely on moderate packing to hold it in place. Zarniko and Müller even go so far as to advise the omission of the packing unless bleeding of a severe nature sets in. The probability of a secondary hemorrhage, however, is sufficient to deter most operators from following their advice.

Honsell has recently published a statement that for the last twenty years sub-mucous resection has been practiced at the surgical clinic of Tübingen. Honsell, after incising and loosening up the mucous membrane from both sides of the septum, removes a semi-circular section with a chisel. He makes the rather astonishing statement that he has never had a perforation or even lost the perichondrium.

In 1903 Hajek, in speaking of the good results obtained in the Krieg-Bönninghaus window resection operation, in more than 100 cases, makes use of the following quotation which has been so frequently utilized by the opponents of this method: "I ought, it is true, to add at once that the method is complicated, technically difficult and of long duration (one-half hour to one and one-half hours) and that it requires much patience on the part of the patient and operator. For this reason the value of the method must not be gauged by the results of the first few cases upon which anyone may operate, as quick and circumspect working is only acquired after some time. To the difficulty just named the disadvantage was added of a large wounded surface on the convexity being left until cicatrization had taken place, and not rarely even afterwards, formations of crusts becomes an increasing source of subjective troubles for the patient. One could not help feeling sometimes that the price which the patient had to pay, in order to obtain in course of time a free passage through the nose, was rather too costly." The objectors, however, neglect to note the fact that Hajek, after making the above statement, proceeds to explain, that by a new modification which he now introduces into the Krieg-Bönninghaus operation, and which consists in preserving the mucous membrane on the convex side, this disadvantage is entirely overcome.

Several articles have appeared in American medical journals, during the past year, which shows commendable interest in this operation. Spratt and Powers advise the use of the chisel for the removal of the deflected cartilage and bone. Anderson advises the packing of both nostrils with strips of lint impregnated with subnitrate of bismuth, the formerly obstructed side firmly and the other loosely. The writer in an article on resection in 1904 advised the vertical incision for anterior deflections but the triangular flap for median and posterior ones. He sutures as a rule, and packs with cylindrical oiled plugs. He operates with the patient in a recumbent posture.

One of the latest, and the most complete, articles yet written on the subject, is Killian's "*Die submucöse Fensterresektion der Nasen-scheidewand*," in *Fränkel's Archiv*. He injects submucously into both sides of the septum a solution of one half of 1% of cocaine to which have been added a few drops of adrenalin. He makes an incision on the convex side, about three sixteenths of an inch posterior to the anterior margin of the cartilage. Through this incision the muco-perichondrium is elevated from both sides of the deflection, then with his long speculum these two mucous membranes are held away from the septum while he removes a large wedge-shaped piece of the deflection with his new cutter. This instrument resembles somewhat a two-pronged fork, with a small blade between the prongs near the distal end. He makes use of Hartmann's conchotome for the removal of the upper part of the deviation, while on the bony portions he employs his bayonet-like chisel. He cautions against taking away too much in the direction of the bridge of the nose. When suturing is necessary, which is not always the case, he makes use of his hook needle with which the sutures can be placed far back. Killian considers it very essential to the success of the operation that the two layers of mucous membrane should be accurately opposed and kept there. For accomplishing this he makes use of loosely applied tampons on both sides which are left in for two days.

From the foregoing history, and from my own experience, my resections now numbering forty-five, the following summary is obtained:

The anterior vertical incision, which can, if necessary, be extended backward at either top or bottom, is the one to be chosen whenever possible.

It should be the aim of the operator to keep intact the convex flap and as this is much easier of accomplishment with but a single cut one should always endeavor to remove the deflections through this anterior incision. There are deflections where there has been a destruction of the mucous membrane on the convex side, frequently from some previous attempt to relieve the obstruction. In these cases, while all the mucous membrane cannot be preserved, one should save as much as is possible. In other cases where the deflection is far back involving the bony portion entirely, or with only a moderate amount of the cartilage, a horizontal incision in addition to the vertical one has frequently proved of decided advantage.

Sutures are more or less optional with the operator. In cases where the edges of the incision are nicely approximated and it is possible to thus maintain them by a moderately firm tampon, sutures are not at all necessary. But in cases where the vertical incision has to be extended backward or where a triangular flap is necessary sutures will usually prove decidedly advantageous.

The use of weak solutions of cocaine, one quarter of 1 % for sub-mucous injections and 1% for local applications, have proved, to me at least, more satisfactory than stronger solutions, inasmuch as they produce no constitutional effect on the patient yet give satisfactory anesthesia. General anesthesia can be used in young or timid patients, but, when the operation threatens to be tedious, it adds to its gravity.

The time needed for the operation depends on the accessibility of the deflection. Some cases require but one-half hour while others, where the deflection is far back and especially where there are adhesions between the septum

and the turbinate, may require from one hour to one and one-half hours. Speed and facility depend entirely upon the operator.

As to the time required for healing that depends, of course, on whether or not it is possible to preserve intact the convex mucosa. When this is preserved there should be primary union and the septum entirely healed a week after the operation. In those cases where, from some previous operation or injury, it is not possible to obtain intact the entire convex flap, the nose must pass through the crusty stage so that healing may not be completed for from four to eight weeks.

This operation is adapted to all types of deflections and spurs. Only it is not advisable to operate on children under fourteen, or in the aged or infirm. Tuberculosis, or any debilitating disease which would tend to greatly prolong convalescence, or the first or secondary stages of syphilis are also contra-indications to the operation.

It is gratifying to know that there is an increasing tendency for this operation to become generally adopted by specialists, and I wish to say with Zarniko that "the operation is really worthy of all praise. It is entirely without a substitute and merits a place in the rank of typical operations which every rhinologist must master, just as one expects the surgeon to remove a leg or operate upon a hernia. May these lines also help to secure it due notice and esteem and root out otherwise inferior and directly objectionable operations."

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Medical Progress.

RECENT PROGRESS IN OPHTHALMOLOGY.

BY MYLES STANDISH, M.D., BOSTON,
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GLAUCOMA.

DELAPERSONNÉ [1] believes that this condition when following the operation for cataract may be due to uric acid retention which favors an edema of the vitreous, and therefore advises careful examination of the urine, and, if indicated, diuretics and regulation of the diet as an adjunct to other treatment. Grandclement [2] believes that the majority of cases of glaucoma and secondary glaucoma may be cured with adrenalin and without an operation. It is necessary that the attack be recent and that there be no incurable organic lesions of the iris, ciliary body or angle; that it be instilled every half hour till the increased tension disappears which will probably be within three days. Eserine must be used with it, to free the angle and aid the adrenalin in controlling the congestion. Stop the adrenalin as soon as the tension diminishes lest a diminished tension be permanent. Dupuy-Dutemps [3] relieved a subacute attack which developed at the end of ten years after extraction for high myopia by dividing a capsular bridle adherent to the cornea. Baro [4] advises antirheumatic remedies, myotics and vibratory massage. Rhus toxicodendron should be given twice a day; the effect of pilocarpine is much increased if combined with dionin and the massage. He uses an Edison pen the point being replaced by a small metallic globe, operated by a battery of accumulators. The shock is mild and regulated by pressure through the lids. The vibrations are about six thousand per minute. There should be two sittings daily, the myotics should follow the massage and the treatment will last two months, after which if there is no improvement, operate. Marple [5] lays great stress upon the condition of the fields and considers concentric contraction as less favorable than nasal restriction when it is a question of operation. Advises sympathectomy only in the simple form and as being warranted in hopeless cases. Horstmann [6] would divide cases of glaucoma simplex as commonly understood into two groups: those without marked inflammatory symptoms which might be termed chronic inflammatory glaucoma and another which might include cases without signs of inflammation or increase in tension. Iridectomy is always indicated in the first class, never in the second in which there is diminished vision, contracted fields and cupping, the first two symptoms being common to diseases of the nerve. He prefers to consider this class as an amaurosis of the optic nerve with excavation and, as patients of this class have arteriosclerosis, suggests that this condition may have some bearing on the etiology. Senn,[7] in one case where adrenalin (1–1,000) was used alone and in another when combined with eserine, saw the

pupil rapidly dilate and the tension become increased, and suggests that the resulting diminished caliber of the anterior ciliary veins by interfering with the outflow of the intra-ocular secretions might explain this occurrence. Stimulation of the dilator fibers caused the mydrinasis. As the later effect of the adrenalin is to contract the ciliary body and thus limit the secretion he advises against the use of adrenalin in acute inflammatory, subacute and chronic types until after eserine has been used with positive results. Abadie [9] thinks especial attention should be paid to those chronic forms which are intermittent with transient pain, haze chromatopsia. He does not approve of myotics and insists that iridectomy is indicated in this class of cases because the final outcome is an acute attack and blindness. He would restrict myotics to the cases in which no objective symptoms can be detected by the physician or patient. Excision of the superior cervical ganglion may be considered, but excluded where iridectomy is indicated.[9] Abadie's rule for abstaining from iridectomy and using a myotic is when the myotic causes contraction of the pupil to the degree that it would were the eye in a physiological state. In other words it should provoke myosis. He, however, believes that a poorly executed iridectomy may precipitate an attack malignant in type. Dianoux [10] without discrediting Abadie, is a firm believer in the value of sclerotomy in both acute and chronic cases, provided the technique is carried out according to his method which he minutely describes. The incision which starts in front of the iris ends well back in the sclera and is followed by a course of massage to maintain a filtration area, together with the instillation of a collyrium of eserine, pilocarpine, cocain and adrenalin. He uses myotics at first in simple chronic cases watching the field, color and light sense, vision and accommodation, but operates if the patient loses ground and, after the healing process has been established, administers quinine, iodide of soda and tincture of strophanthus and possibly gives a course of strychnia injections. He is likewise in favor of the constant current. Peters [11] has noticed attacks following contusion of the globe in which there was neither wound of penetration nor infection, and agrees with Sala [12] that an albuminous transudation into the anterior chamber with obstruction of the angle was a probable cause. Uribe y Troncoso,[13] as a result of a carefully carried out series of experiments, is of the opinion that the difficulty of filtration of albuminous liquids to the anterior chamber and the resulting posterior pressure explains the manner of productions of the characteristic symptoms of glaucoma. Cantonnet,[14] taking into account the important rôle that the chlorides play in maintaining the equilibrium of the animal fluids, that the seat of osmotic interchange is the lymphatic system and that permeability of the kidneys is of prime importance for good functioning of the lymphatics, and likewise considering the eye as a sort of lymphatic annex to the rest of the system, has sought to determine what might be the influence of variations of renal elimination upon the concentration of salines in the eye in cases of glaucoma, a condition somewhat resembling an ocular edema. He, therefore, has had recourse to diuretics, such as chloride of sodium and lactose, in some of his cases and in others tried serous elimination by sulphate of soda. His results in seventeen cases were not encouraging. Wahlfors [15] calls attention to a fact long known, but often forgotten that the light sense is diminished in glaucoma. This disease is frequently ushered in by an hemeralopia which may have existed for many years. He believes it to be present in all cases of simple glaucoma and if not noticed it is because it was not pronounced.

As regards cervical sympathectomy, Robert G. Loring,[16] in summarizing, states that theoretically one finds himself in the realm of hypothesis with various conflicting theories; that the large number of positive results present something tangible from the therapeutic standpoint; that a study of the clinical results does not aid materially in determining the prognosis although they seem to rather favor the bilateral operation. It may be said that in glaucoma simplex the tension usually becomes normal and generally remains so for a number of months. The vision may show considerable improvement for quite a period of time unless atrophy is present. Serious after results which would tend to contraindicate an operation have thus far not been recorded. The writer believes the operation to be justifiable when, notwithstanding myotics, iridectomy and sclerotomy, the disease progresses to eventual blindness.

SYMPATHETIC OPHTHALMITIS.

Theobald:[17] About thirty years ago Mackenzie's theory that the optic nerve played the chief rôle in sympathetic ophthalmia had been practically abandoned and the view that the changes in the sympathizing eye were the result of an influence, reflex in character, transmitted by the ciliary nerves was generally accepted. This theory had been advanced as early as 1845 by Tavignol, was doubted by Mackenzie, considered as quite probable by Müller in 1858 and was accepted finally by Graefe, Donders and others. This theory has in turn yielded, since pathology has declared that irritation transmitted through nerves containing sensory and sympathetic fibers could at most produce vasomotor paralysis, but that sympathetic inflammation must be the result of bacterial action, direct or indirect. Arlt, in 1876, was rather inclined to fall back to the optic nerve theory of Mackenzie, arguing that there was a large percentage of changes in the optic nerve and retina and a very small percentage in the ciliary nerves. Although his suggestion attracted considerable attention his evidence was inconclusive. In 1881 Leber and Snellen advanced the theory which is generally accepted to-day that the inflammation in the sympathizing eye was due to a micro-organism

traveling along the lymph spaces of the optic nerve. Berlin modified it somewhat by suggesting that the infection occurred through the general circulation, the eye tissue having an especial affinity for the organism. Schmidt-Rimpler modified this again by supposing that the microbe attacked this particular tissue, instead of other organs, because it had been rendered less resistant in consequence of congestion produced by vasomotor reflex from the exciting eye, a view which had been advanced by Gifford in 1887. The latest modification is the cytotoxin idea of Brown Pussy who in 1903 suggested that it is the toxins produced in the exciting eye which pass over to the other and cause the mischief. The experiments of Deutschmann in which he endeavored to produce sympathetic ophthalmia in rabbits by introducing pyogenic organisms into the eye for a time was regarded as offering strong evidence in favor of the germ theory until Gifford and Randolph were unable to confirm his results. The inflammation in the second eye did not at all resemble the sympathetic disease as seen in man. Dr. Theobald believes that in the ciliary nerve theory there exists harmony between theory and fact, and in support mentions the absence of bacteria in the exciting eye, variable period of incubation, the existing process in corresponding parts of both eyes, so well supplied with sensitive nerves, its occurrence as result of non-penetrating wounds, favorable after enucleation. He would explain the presence of irritation without inflammation and inflammation without irritation by proportionate difference in sympathetic fibers (trophic) and sensory fibers. Head and Campbell as a result of their studies regarding herpes zoster believe that inflammation may follow irritation of sensitive nerves supplying a distant part, and that the eruption is due to irritation of that part of the ganglion which presides over the sensation of pain. By analogy, if inflammation of skin areas may become inflamed by irritation of ganglionic cells whence come sensitive nerves supplying the part, why may not the irritated sensitive condition of the injured eye so affect the ganglion that it in turn may produce inflammation in the other eye? In conclusion he states he has long considered sympathetic and herpes zoster as kindred diseases, has advocated this doctrine of sympathetic disease and has long included under the term "trophic nerve inflammations," these diseases as well as malarial keratitis, and several varieties of inflammation of the iris, choroid and ciliary body. These so-called trophic conditions are unilateral and probably due to ganglia belonging to the fifth, principally the ophthalmic. Motais [18] calls attention to the close connection between the facial and intracranial system of veins, and as there are practically no valves such acts, as lifting, defecation, etc., would naturally lead to venous engorgement in the eye and would suggest the veins of exit under these conditions as probable paths of transmission for sympathetic. Although this is unsupported clinically, Leber considers it worthy of thought as the communication has been demonstrated both clinically and anatomically. Ligation of the venæ angulares would be the natural prophylactic procedure. Schulin [19] attempts to supply the missing link in Deutschmann's theory by study of two cases of punctured eyeball, of similar origin, both children, one a weakling with slight injury, the other sturdy, the injury in the latter instance being more severe. The stronger boy did very well; the other was not so fortunate. Constitutionally he considers one as sthenic, the other asthenic. He is a disciple of von Poehl who believes that the chemical principle of vital force to be spermin, a ferment which promotes oxidation and thus maintains life that would otherwise become extinct. Lactic acid is an imperfect product of retrogressive metamorphosis and is antagonistic to spermin which latter is bactericidal and creates immunity. Lactic acid suspends it. High vitality means alkalinity of blood and ample spermin while low vitality suggests diminished number and abnormal structure of the blood corpuscles with lessened resistance. Spermin is set free by the disintegration of leukocytes. Cocci attract leucocytes, by the destruction of which spermin is produced, which in turn destroys the bacilli before the cocci, whereas in a weakened organism the bacilli outlive the cocci. When sympathetic inflammation sets in the proportion of bacilli to cocci is large, while a preponderance of cocci would tend to the development of panophthalmitis and be less apt to excite sympathetic ophthalmia. He therefore does not believe with Deutschmann that sympathetic disease is a simple coccus infection, but rather mixed infection, bacilli preponderating, in a weakened organism. Glovine [20] suggests that after ocular traumatism, especially in the ciliary region (with or without the participation of microbes), there is destruction of ciliary body cells with the production of cytotoxins. They enter the circulation where, thanks to the presence of antitoxins, they are very often inhibited. If the antitoxins are not of sufficient activity the cytotoxins are carried by the blood current to the other eye and exercise a specific deleterious action upon the ciliary body. If micro-organisms are accidentally present in the blood they may become active but their rôle is secondary. By injections of emulsions of ciliary bodies and iris of dogs into the peritoneum of rabbits and later injecting the rabbit blood serum into the anterior chamber of dogs or even into the general circulation, he was able to evolve a complex suggestive of serous iritis. He believes that there are two toxins thus formed: one which acts in some particular way upon the unpigmented epithelium of the ciliary body (a cyclotoxin) and another which extracts the pigment from cells (pigmento-lycine).

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(*To be continued.*)

Reports of Societies.

AMERICAN GYNECOLOGICAL SOCIETY.

THIRTIETH ANNUAL MEETING, HELD AT NIAGARA FALLS, MAY 25, 26 AND 27, 1905, UNDER THE PRESIDENCY OF DR. EMILIUS C. DUDLEY, OF CHICAGO.

(Concluded from No. 14, p. 393.)

THE RADICAL ABDOMINAL OPERATION VERSUS THE VAGINAL OPERATION FOR CARCINOMA OF THE UTERUS.

DR. C. C. FREDERICK, of Buffalo, N. Y., read a paper on this subject, in which he drew the following conclusions: (1) The radical operation for carcinoma of the uterus should be done only when the gross lesions can quite certainly be diagnosed as confined to the uterine tissue. (2) The deeper tissues of the cervix were generally invaded first, and also the deeper layers of the vagina in the immediate vicinity of the cervix were infected before the disease appeared upon the mucous surface. (3) The bladder wall was very early infected, especially when the anterior lip of the cervix was the starting-point of the growth. (4) When pain became a prominent symptom, the growth had passed beyond the uterine tissue. Such an involvement was a positive contra-indication to a radical operation. (5) Carcinoma of the body presented an entirely different condition. In these the liability of extra-uterine lymphatic infection was less for the same period of growth. (6) When the radical operation was done, it was necessary to remove as much of the vaginal walls and pericervical tissues and broad ligaments as possible. (7) It was a well-attested fact, that in most recurrences after hysterectomy, the growth was found in the cicatrix and the adjacent vaginal tissues. (8) In view of the point at which recurrence began, removal of the pelvic lymphatics and glands did not insure against recurrence. (9) If the vagina was ordinarily capacious, and if the uterus could be drawn down, it would seem that the vaginal route was naturally the one by which the operation could be most readily and thoroughly done. (10) It was possible, yes, probable, that some cases of recurrence were due to the infection of the freshly incised tissues at the time of operation by contact of the carcinomatous mass or its fluids. By the vaginal operation this might to a degree be prevented by the removal of the cancerous mass or by thoroughly cauterizing it before beginning the operation proper. (11) The operation could be more quickly done than by the abdominal route. (12) Convalescence, after vaginal operations, was much more rapid; there was much less pain, and there was much less shock to the nervous system. (13) For the cervical carcinoma, in most instances the combined clamp and cautery operation seemed to be the preferable one. (14) Undoubtedly, infected areas were reached and rendered harmless by the free use of the cautery in this operation. (15) The vaginal walls and all tissues should be seared by it, except those at the uterovesical junction. The writer would, therefore, limit the abdominal operation to those patients in whom the condition of the vagina or immobility of the uterus made the vaginal operation practically impossible.

PARAVAGINAL OR ABDOMINAL OPERATION IN CARCINOMA OF THE UTERUS.

DR. GEORGE GELLHORN, of St. Louis, Miss., in a paper with this title, presented the following conclusions: (1) The object of the symposium was to discuss how we might improve our operative technique in order to better the results in uterine cancer. (2) The following conclusions applied only to cancer of the cervix uteri. (3) The radical abdominal operation, so far as the routine ablation of the lymphatic organs of the pelvis was concerned, had thus far failed to yield the desired results. (4) On the other hand, the eradication of the parametria had been found to reduce greatly the percentage of cures. (5) The simple abdominal and vaginal operations which did not include this procedure should be discarded. (6) For the extirpation of the parametria, Wertheim's method was the best of the abdominal operations. It had, however, he believed, certain disadvantages as compared with the paravaginal method of Schuchardt. (7) Considering the encouraging results of igni-extirpation, a combination of thermocautery with paravaginal extirpation gave promise of further improvement in operative results.

A SUGGESTION FOR THE SURGICAL TREATMENT OF INCONTINENCE OF URINE IN WOMEN.

This was the title of the President's address, delivered by DR. E. C. DUDLEY, of Chicago. After referring to the expansion of gynecology, he suggested an operation which was based on the same principle as that proposed by Albarran, namely, advancement of the meatus urinarius to the clitoris, but this was done without dissecting the urethra free and, therefore, it obviated the danger of sloughing of the urethra; it was performed as follows, in two steps:

First step. — A horseshoe-shaped surface is rather deeply denuded between the meatus urinarius and the clitoris, and to either side of the urethra throughout the entire length of it.

Second step. — The meatus is drawn up to a point near the clitoris, and is secured there by means of two sutures. The lateral portions of the denuded surface are now closed. The effect of the operation is to replace and to retain in its functional relations the sagging displaced urethra. The two purse sutures necessarily stretch the urethra upward to the region of the clitoris, and that the lateral sutures must tend to hold it in its new position. By this means, it is proposed to straighten out the urethrocele by longitudinal traction and by lateral traction to collapse and to hold together the dilated walls of the urethra, and thus to overcome the sacculation at the neck of the bladder, where residual urine is apt to accumulate and give rise to trigonitis cystitis, and possible incontinence. In many cases, it will be necessary to combine with the operation some appropriate surgical treatment for an associated cystocele and in nearly all cases to perform perineorrhaphy to relieve also relaxation of the posterior vaginal outlet.

In one case he saw fit to narrow the pouching urethra in order to overcome the urethral dilatation. He had performed this operation five times since Jan. 1, 1905. In the first four cases, relief from incontinence was immediate, and had been continuous. The last operation was too recent to be taken into account. In one case there was so much relaxation of the skin and other soft parts in the region of the clitoris that he feared the sutured urethra might pull these structures down to the old manipulation instead of being held up by them, but so far it remained well in place. In such a case, again, or in the event of recurrence from such a cause, he should be disposed to make a deep oval

denudation over the pubes on the mons veneris, just above the clitoris, the longer axis of the oval being directed transversely, and to unite the margins of this wound by a transverse line of union, as so to make the clitoris a fixed point on a sufficiently high plane to hold the urethra taut. For obvious reasons, this procedure would be preferable to the removal of the clitoris, and the union of the meatus to the parts thereby exposed.

THE MORTALITY IN OPERATIONS FOR FIBROID TUMORS OF THE UTERUS.

DR. J. MONTGOMERY BALDY, of Philadelphia, contributed a paper on this subject. Degenerations of fibroid uterus, except malignant and necrotic, were of more scientific interest than practical value. The greatest dangers of fibroids lay in the large death-rate following operations due to heart degeneration, arterial changes, lung thrombosis, etc. He pointed out the condition inherent in all fibroid tumors of the uterus, and said the tumor should be removed at a period early enough to anticipate the changes.

MIGRATORY UTERINE FIBROIDS.

DR. REUBEN PETERSON, of Ann Arbor, Mich., reported cases showing the different stages of the separation of uterine growths from the uterus, and their attachments to other abdominal organs. The causes and results of such migration were studied in the light of the literature on the subject, and the personal experience of the author. Case 1 was an irregularly shaped subperitoneal fibroid, the size of a fist, attached to the uterus by a very slender pedicle. The latter was very friable and broke away from the uterus during the removal of the latter. The omentum was attached to the posterior surface of the fibroid and partially nourished it. Case 2 was one of subperitoneal uterine fibroid, the size and shape of a normal kidney, connected with the uterus by a narrow pedicle, twisted once on itself. The tumor was situated on the right uterine horn, although the pedicle came from the other horn. The tumor was also attached to the bladder, pelvic peritoneum, omentum and appendix. Case 3 was a hard, smooth tumor, the size of an orange, unattached to the uterus, having all the characteristics of a subperitoneal fibroid, surrounded on all sides by the omentum and nourished entirely by the omental blood vessels.

SURGICAL TREATMENT OF ULCER OF THE STOMACH.

DR. WILLIAM H. WATHEN, of Louisville, after discussing the various pathological conditions indicating the necessity for stomach drainage and the operations that had been performed, drew the following conclusions: (1) Some cases of acute and subacute gastric and duodenal ulcer, and many cases of chronic and duodenal ulcer, should be treated by efficient stomach drainage into the duodenum or jejunum. (2) Drainage by pyloric divulsion and by pyloroplasty with its modifications has not been successful, and these method ods are now practically obsolete. (3) Gastroduodenostomy, as modified by Kocher and Finney, may give efficient drainage in many cases, but it should be limited to such cases as cannot be operated upon by a posterior retrocolic gastro-enterostomy with the anastomosis near the duodeno-jejunal flexure. (4) Anterior anticolic gastro-enterostomy should not be an operation of election, but an operation of expediency or necessity, to give temporary relief, or to meet special abnormal conditions that may contra-indicate the posterior attachment. (5) The ideal operation of election must be the posterior retrocolic attachment near the beginning of the jejunum, and at the bottom of the stomach in the pyloric end, thus eliminating the loop. (6) This gives the most efficient drainage, prevents the vicious circle and regurgitant vomiting, leaves stomach and intestine in nearly normal relation, and is followed by better immediate and ultimate results. (7) The intestinal incision should be made longitudinally, and not less than two inches long, and the stomach incision of corresponding length, preferably in the oblique direction. An epileptical strip of mucosa should be incised from both stomach and intestinal incision. (8) The anastomosis is best made with a continuous suture (Pagenstecher or silk), using a full curved, round-pointed needle. The suture should be applied in double layers, the inner to include all the visceral layers and unite the cut edges of the opening; the outer, one-fifth inch away, to include the serous and subserous layers. (9) Entero-enterostomy, or closure or resection of the proximal jejunum or the pylorus, is unnecessary. It commits a traumatism and leaves a deformity that may cause immediate and subsequent bad results.

SYMPOSIUM ON THE TOXEMIAS OF PREGNANCY.

CLINICAL TYPES OF PREGNANCY TOXEMIA.

DR. J. CLIFTON EDGAR, of New York, contributed a paper with this title, in which he considered the benign type, subacute type, acute type, fulminant type, toxemic coma without convulsions, acid toxemia simulating hepatic pregnancy toxemia, persistent hyperemesis without clinical symptoms of toxemia, etc.

Cases illustrating each type of toxemia were reported.

RENAL INSUFFICIENCY.

DR. HENRY C. COE, of New York, contributed a paper on this subject. This referred not only to diminished amount of urine, but to different excretion of urea, with or without accompanying albumin and casts. The importance of this subject could not be overestimated, on account of its direct bearing on the prevention of eclampsia. He mentioned the erroneous views formerly held that eclampsia always came suddenly, without warning. Now it was known that danger signals were seldom absent long before the attack, if careful watch was kept over the urine. Diminished urea, not the presence of albumin, was the important point. There were two channels for the excretion of toxins, — the kidneys and intestines. Both must be made use of. The kidneys and bowels should be flushed and the diet regulated all through pregnancy. One should know the daily amount of urine at frequent intervals, and the amount of urea. He should not wait for general evidences of toxemia, gastric disturbances, pruritus, headache, etc., but anticipate them. Preventive medicine had nowhere more important application than in the case of a pregnant female. Every one had had occasion to reproach himself for carelessness in this particular. Illustrative cases were cited.

PERNICIOUS VOMITING OF PREGNANCY.

DR. J. WHITRIDGE WILLIAMS, of Baltimore, after pointing out the distinction between vomiting of and vomiting in pregnancy, divided the former into three groups, and discussed their nature, etiology and treatment, namely, reflex, neurotic and toxemic. The reflex vomiting of pregnancy might be due to the presence of abnormalities of the generative tract or ovum, which existed prior to the onset of pregnancy, or were coincident with it. Among such conditions might be mentioned retrodisplacements of the uterus, ovarian tumors, certain forms of endometritis and abnormalities of the ovum, such as hydatidiform mole, hydramnics and certain cases of twin pregnancy.

The observations of the author and others showed that tpyical lesions might be found at autopsy in certain cases, and these consisted in the necrosis of the central portions of the liver lobules, and fatty degeneration and necrosis of the secretory cells of the kidney. Such changes could be produced only by the circulation in the blood of some toxic substance, which acted destructively upon the cells in question. The occasional occurrence of jaundice in some cases added confirmation to the existence of an hepatic lesion; while the not infrequent association of peripheral neuritis with the vomiting accentuated the probability of its toxemic origin. The liver lesions were identical with those observed in acute yellow atrophy of the liver and icterus gravis, though in most of the cases of vomiting no marked diminution in the size of the liver had been noted. As the former affections occurred usually in the second half of the pregnancy, and the vomiting in the first half, it seemed probable that the effect of the toxemia varied somewhat with the duration of the pregnancy. At present, we were unacquainted with the exact nature of the toxic substances, though they were supposed to be metabolic in origin, but whether derived from the mother or fetus, or both, was not known. All that was definitely settled at present was that we had to deal with a toxemia, which gave rise to serious lesions in the liver, and later in the kidneys. That the latter were secondary in character was indicated by the fact that the urine did not contain albumin or casts until shortly before death. Associated with these lesions was a striking change in metabolism, manifested by a marked increase in the percentage of the total nitrogen of the urine put out as ammonia, which, instead of being 2% to 5%, as normal, might rise to 16%, 32% or even 46%. Whether the increased ammonia output was due to the fact that the liver lesions interfered with the normal oxidation of nitrogenous material, so that large amounts escaped conversion into urea, and were, therefore, excreted in a less highly oxidized form, as ammonia, or whether it represented an attempt to neutralize an acid intoxication, was as yet undetermined. The practical point established was that a marked increase in the percentage of the urinary nitrogen excreted as ammonia indicated the existenceof a serious toxemia, which, if allowed to continue, would bring about lesions in the liver and other organs inconsistent with life, and accordingly abortion should be induced as the only hope of saving the patient. It was probable that an ammonia output of 10% represented the danger signal, and as soon as it was reached immediate interference was demanded.

In the reflex and neurotic forms of vomiting, the ammonia output remained normal, and accordingly in such cases the treatment should consist in correcting genital lesions, if present, and the employment of mental suggestion and rest cure. There were at least two forms of toxemia of pregnancy, — one giving rise to pernicious vomiting and acute yellow atrophy and the other to eclampsia. These conclusions as to the nature of the vomiting of pregnancy were based upon a number of imperfectly observed cases in previous years, and seven carefully studied cases occurring during the past two years.

ECLAMPSIA AND ITS TREATMENT.

Dr. Cyrus A. Kirkley, of Toledo, Ohio, said that other toxins than urea might produce eclampsia. Mixed infection was most probable. Renal insufficiency rather than albuminuria was an etiological factor. Although the source of the toxins was unknown, recent research rather pointed to functional disease of the liver. Prophylactic treatment, as a rule, was successful, and this consisted of means to promote elimination through the great emunctories. Venesection in suitable cases, both as a prophylactic and curative measure, stood first in the list of remedies.

THE TREATMENT OF ECLAMPSIA.

Dr. Franklin S. Newell, of Boston, before considering the curative treatment of eclampsia, discussed the prophylactic treatment, because there was little question but that eclampsia was a preventable disease in the great majority of cases, even of those who developed the signs of a toxemia. Prophylaxis should be directed to the prevention of any accumulation of waste products at any period of pregnancy, combined with the ordinary hygienic measures to maintain and improve the patient's general condition.

The treatment, to be efficient, should have four distinct objects in view: (1) The prevention of further absorption of toxins by the removal of the cause; (2) limitation of damage by the toxins already in the system; (3) elimination of the toxins, and (4) treatment of the patient. These objects were discussed in consecutive order, and at considerable length.

As to after care of the patient, for some days after the acute process had subsided the patient should be kept on a liquid diet. Absolute quiet and freedom from care were imperative, and free excretion should be maintained. Sedatives and stimulants should be used as indicated.

VAGINAL CESAREAN SECTION, ITS INDICATIONS, ADVANTAGES AND TECHNIQUE.

Dr. Henry D. Fry, of Washington, D. C., said that the chief indications for the employment of vaginal Cesarean section and that which had mainly led to its adoption, were the prompt and easy emptying of the uterus in cases of grave eclampsia. Other indications claimed were cancer of the uterus, rigidity of the os, threatened rupture of the uterus, prolapse of the funis, placenta previa, heart disease in the pregnant woman, and hemorrhage from the normally implanted placenta. The writer entertained grave doubts regarding the application of this operation or any other method of rapid dilatation to the treatment of placenta previa. The reduced maternal mortality from this serious complication was largely due to recognizing the value of slow dilatation. One might be tempted to employ it in a case of placenta previa complicated by a long undilated cervix, but this condition presented the limited field assigned to abdominal Cesarean section. He summed up the various indications for this new operation.

The advantages of vaginal Cesarean section were the rapidity with which the uterus could be emptied. From six to ten minutes was all the time that operators had reported necessary, and as they became more familiar with the technique, it might be further reduced. Few operators had done more than one or two operations. Twenty to thirty minutes should complete the sewing up of the wound. There was little traumatism, and a clean surgical cut to sew up instead of leaving a lacerated surface. In eclampsia the blood resulting from the operation was beneficial, and the patient was returned to bed in the best condition to overcome toxemia.

THE MORTALITY OF OPERATIONS, OTHER THAN STRUMECTOMY, IN CASES OF EXOPHTHALMIC GOITRE, WITH SPECIAL REFERENCE TO GYNECOLOGICAL OPERATIONS.

Dr. Barton C. Hirst, of Philadelphia, said that to learn the collective experience of American surgeons with Graves' disease complicating operations, 366 letters were dispatched to the members of the national societies of surgery and gynecology. Forty-three

surgeons reported 69 cases. This number added to the 6 collected and reported by Sanderson made a total of 75. Of this number, 13 died. In 11 of these fatal cases, the cause of death was expressly stated to be acute thyroidism, with tachycardia to an extreme degree, and eventual heart failure. In one case of appendiceal abscess the patient died of the combined effects of sepsis and thyroidism. In another case of pelvic abscess, the patient died under chloroform before the operation was begun. Excluding these two cases, the mortality from thyroidism was 14.6%, or, including them, 17.3%. The character of the operation seemed to have made little difference in the results. The mortality of the minor operations was 16%; that of the hysterectomies and myomectomies, 13.3%. It appeared, therefore, that the existence of exophthalmic goitre added about 15% to the mortality of any operation performed upon the patient. In the first of the authors patient's there had been a distinct goitre and exophthalmos for years, but the tachycardia was moderate. The symptoms in this case were never very alarming, and soon yielded to treatment. It was not known that the second patient had Graves' disease until two days after the operation, when the pulse rose to 180; the eyes protruded, and the throat swelled. He then learned that since girlhood the woman had been subject to such attacks, but lately had been free from them. Although some improvement was shown after hypodermoclysis, purgation and heart stimulants on the first day that symptoms appeared, a rapid and complete recovery was secured in the next three or four days, apparently in consequence of the administration of superarenal extract in three-grain doses every four hours.

SUDDEN DEATH DURING OR IMMEDIATELY AFTER THE TERMINATION OF PREGNANCY OR OPERATION ON THE PELVIC ORGANS IN WOMEN.

DR. EDWARD P. DAVIS, of Philadelphia, reported three instructive and interesting cases, and presented a table of 25 typical cases, selected from 193 papers on the subject consulted, and drew the following conclusions: (1) That sudden death might occur after abortion, labor or operation, from undemonstrable causes. (2) Death might follow abortion, labor or operation from the rapid formation of a pulmonary embolus. Examination of cases showed that this happened after so many different procedures that it was impossible to refer it to any one operation or manipulation. Pulmonary embolism might develop before the placenta had been delivered, or when delivered by Crede's method, although it was impossible to select any one manipulation which produced this accident. It was not frequent after Cesarean operation, nor after the more complicated obstetric operations. Predisposing and probably exciting causes were bronchial infection and abnormal conditions of the blood. In 18,800 women in childbirth or having operation, 30 cases of immediate pulmonary embolism occurred, with a mortality of 73⅓%. Diagnosis, respiratory spasm with continued heart action. Treatment, hypodermatic stimulation and electric current. Intravenous saline transfusion had not been proven efficient. (3) Primary thrombosis and secondary embolism might cause death after the termination of pregnancy or operation. Causes: Pre-existing infection, mechanical violence, altered conditions of blood serum and lesions in the walls of the vessels. Most important symptom, Mehler's sign, rapid pulse. Temperature curve in these patients fell on the third or fourth day, while the pulse curve rose. Death usually occurred from secondary formation of pulmonary embolus. Treatment consisted in absolute rest, bandaging of extremities and in some cases abdominal section with ligation and excision of the veins of the broad ligament. Pulmonary complications developed in 25% of the cases. Thrombosis was most common in vessels connected with the left iliac vein. There was not conclusive evidence that the entrance of air into the veins was a sufficient cause for death. Gas might form in the vessels from infection. (4) Sudden death occurred in parturient women, and after operation, from reflex nervous shock, without assignable cause; also from disease of the thoracic viscera, from infection of the placental site, and other obscure conditions. Patients having fibroid tumors were especially liable to disease of the heart and vessels.

WHAT IS THE PRESENT STATUS OF ELECTRICITY AS A THERAPEUTIC AGENT IN GYNECOLOGICAL PRACTICE?

DR. CHAUNCEY D. PALMER, of Cincinnati, Ohio, spoke of the importance of this agent and referred to its evolution. He referred to the value of measuring the current in individual cases, and discussed at great length in what classes of gynecological cases electricity was useful. The possibilities of electricity as a therapeutic agent were by no means limited. The object of the paper was an effort to speak of electricity and place it on its proper basis, not to magnify or misrepresent its virtues, nor to depreciate its powers.

OFFICERS.

The following officers were elected: President, Dr. R. B. Maury, Memphis, Tenn.; First Vice-President, Dr. Howard A. Kelly, Baltimore, Md.; Second Vice-President, Dr. Reuben Peterson, Ann Arbor, Mich.; Secretary, Dr. J. Riddle Goffe, New York City; Treasurer, Dr. J. Montgomery Baldy, Philadelphia, Pa.

Hot Springs, Va., was selected as the place for holding the next annual meeting.

Recent Literature.

A Handbook of Nursing. Revised edition. For Hospital and General Use. Published under the direction of the Connecticut Training School for Nurses connected with the General Hospital Society, New Haven, Conn. Illustrated. Philadelphia and London: J. B. Lippincott Company. 1905.

In 1878, a Handbook of Nursing was prepared for the use of the Training School for Nurses in the State Hospital at New Haven, Conn. The committee having the matter in charge thought it desirable to provide certain practical directions for the use of the nurses of this institution. After a lapse of twenty-seven years a second edition has been published, naturally with certain changes. The result is a somewhat composite work to which various members of the attending staff of the hospital, nurses and others have contributed. The work is designed to assist the nurse in her daily work. It is made up of certain simple statements regarding disease and goes into detail in relation to the various matters pertaining to nursing. It is adequately illustrated, largely by means of photographic reproductions, and should certainly continue to fill the need which led to its inception.

American Edition of Nothnagel's Practice. Diseases of the Kidney, Diseases of the Spleen and Hemorrhagic Diseases. By Drs. H. Senator and M. Litten, of Berlin. Edited with additions by James B. Herrick, M.D., Professor of Medicine in Rush Medical College, Chicago. 816 pp. Illustrated.

Diseases of the Blood (Anemia, Chlorosis, Leukemia, Pseudoleukemia). By Dr. P. Ehrlich, Frankfort-on-the-Main; Dr. A. Lazarus, of Charlottenburg; Dr. K. von Noorden, of Frankfort-on-the-Main; and Dr. Felix Pinkus, of Berlin. Entire volume edited, with additions, by Alfred Stengel, M.D., Professor of Clinical Medicine, University of Pennsylvania. pp. 714. Illustrated.

Malaria, Influenza and Dengue. By Dr. J. Mannaberg, of Vienna, and Dr. O. Leichtenstern, of Cologne. Entire volume edited, with additions, by Ronald Ross, F.R.C.S., F.R.S., Professor of Tropical Medicine, University of Liverpool, J. W. W. Stephens, M.D., D.P.H., Walter Myers, Lecturer, in Tropical Medicine, University of Liverpool; and Albert S. Grünbaum, F.R.C.P., Professor of Experimental Medicine, University of Liverpool. pp. 769. Illustrated. Philadelphia and London: W. B. Saunders & Co. 1905.

We have before us three additional volumes of the Nothnagel Encyclopedia of Practical Medicine translated into English, namely, Kidney and Spleen and Hemorrhagic Diseases; Diseases of the Blood; Malaria, Influenza and Dengue.

The first of these, on Diseases of the Kidney, is by Professor Senator, and on Diseases of the Spleen and Hemorrhagic Diseases by Professor Litten, both of Berlin. The translation is essentially as originally published, in the German, but the editor of this volume, Dr. James B. Herrick, of Chicago, has taken the justifiable liberty of adding certain practical points, particularly in relation to treatment, diagnosis, urinary analysis and the surgical treatment of nephritis. The editor has likewise added a few pages on Cryoscopy and Phloridzin Glycosuria. Professor Litten's part of the volume has been left essentially as he wrote it, although the subjects of which he treated have undergone modifications within the past few years. Certain additions have, however, been made to bring the subject matter more up to date.

The second volume, on Diseases of the Blood, is by Professor Ehrlich, Professor von Noorden, Dr. Lazarus and Dr. Pinkus, the English edition being edited by Dr. Alfred Stengel, of Philadelphia. The editor here also, as has been the general custom in the volumes which have already appeared, has made certain additions in order to bring the work into the closest possible relationship with American and English readers. In this volume, which includes an authoritative statement on the general subject of hemorrhage, certain additions have been made in the way of giving the views of Ehrlich's opponents. In general, however, the articles remain as originally written.

The third volume, edited with additions, by Major Roland Ross, Dr. J. W. W. Stevens and Dr. Albert S. Grünbaum, is on the subjects of Malaria, Influenza and Dengue, written by Drs. Mannaberg and Leichtenstern. In editing the German articles, Professor Mannaberg's discussion of malaria has been left practically unchanged, excepting to add the part played by certain mosquitoes in the etiology of the disease. A note has been added on the Romanowsky-Ziemann stain as the best for malarial parasites. The general relation of mosquitoes to the disease, which did not find a place in the original manuscript, the editors have very properly added. Finally, the English editors have discussed the best methods of prophylaxis, naturally with special relation to the mosquito.

These volumes are already so well known to the students of the various subjects discussed in the German edition that it is not necessary to enter into further details regarding their merits. The system as a whole stands pre-eminently as the best encyclopedic treatise on medicine now extant. The fact that each volume, these as well as others, has been written by a recognized authority on the subject treated, is a commendation and an assurance of excellence which requires no further statement from us. The difficult work of editing has been admirably done by Dr. Stengel and his co-editors. Were it not for the co-operation of the original German contributors to the system this work would have been practically impossible. As it is, there has been a willingness on the part of the original writers of the articles to have such additions made to the English edition as seemed fitting in the eyes of the editor. The illustrations are excellent, and the character of the volumes naturally remains, as heretofore, entirely satisfactory, though of necessity somewhat heavy and, therefore, clumsy to handle.

An Introduction to Dermatology. By Norman Walker, M.D., Edinburgh. With 49 full-page plates and 50 illustrations in the text. Third edition, revised and enlarged. New York: William Wood & Co. 1905.

It will be remembered that this book was practically a reproduction of lectures which had been delivered to students in Edinburgh. The first edition appeared in June, 1899, and we have now to notice the third edition, which was issued in October, 1904. In this last edition the writer has omitted a good deal of what he describes as "argumentative" matter which appeared in the former edition. Electrotherapy has been accorded a space that its importance at the present time demands. The illustrations vary in merit, some of the photographic representations being very good, while many of the colored figures are not up to the present standard. The book, however, as a small compendium of our dermatological knowledge, has undoubtedly served a useful purpose.

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DISEASES OF INFANCY.

IT is a commendable custom which certain medical periodicals have adopted to include between the covers of one number a series of articles on related subjects. The attention which such a plan draws to the subject under consideration, whatever it may be, is desirable in the present state of medical practice.

We have before us the current number of the London *Practitioner*, which devotes its entire issue to a discussion of the diseases of infancy, with a large number of articles from the pens of various contributors. This number of the journal, therefore, epitomizes our present-day knowledge of the affections peculiar to infancy and gives the reader a comprehensive idea of the existing status of the best opinion on the subject. The articles were evidently prepared for the benefit of practitioners who are not particularly informed on the subjects discussed. They are for the most part written in simple, somewhat didactic fashion and apparently make no claim to originality. The information contained in them, though of special interest to physicians in England, applies in great part here, and should be read with profit.

The practical character of the discussion is shown by the titles of the articles, some of which are as follows: Hygiene of the Mother before the Birth of Her Child; Points Regarding Mother's Milk; Use and Abuse of Condensed Milk; Municipal Feeding of Infants; Infantile Mortality; Convulsion; Vaccination; Scurvy; Atrophy and Dentition. There are also articles on diseases of the skin and the eye in young children. A contribution of rather unusual interest is a description of a new organization in France due to the energy of Professor Budin. In 1892, when at the head of the maternity in the Charity Hospital, impressed with the infant mortality among the children of mothers confined at the Maternity Hospital, he conceived the idea of establishing places of consultation whereby account might be kept of the birth of the infants and their subsequent history recorded as far as possible. In general, the design of the plan is to supervise the hygiene and feeding of young infants, to encourage as far as possible breast feeding, and in a general way to instruct mothers in the care of their children. These "consultations" have resulted in an increase of breast feeding, the lowering of infantile mortality, and the production of stronger and healthier children as the result of more normal gastro-enteric conditions. The plan has spread widely since its inception, and undoubtedly has contributed largely to the decrease of the death-rate. We note in this issue a somewhat similar plan which has recently been undertaken in New York.

Turning from this encouraging experiment to a paper on infantile mortality by Dr. Arthur Newsholme, we find the somewhat remarkable fact that in England and Wales, although there has been a marked decline in the general mortality, infantile mortality has remained stationary. With the exception of the ages from forty-five to seventy-five among men, and from forty-five to fifty-five among women, there has been in the aggregate a great reduction in the death-rate from all causes. The reasons for the disparity between these figures and that of infants is shown to be due to causes in a measure preventable, and need not here be discussed in detail. Improper feeding, with the inevitable gastro-enteric complications which result, illegitimacy, and general ignorance on the part of mothers, all are definite factors toward the production of such mortality. Furthermore, Dr. Newsholme insists that the question is not wholly one of ignorance, but often one of plain morality. Money which should be spent for the family, and especially for the care of its youngest members, is frequently spent for drink. This naturally leads to conditions which endanger the life of the young. Could alcohol be eliminated, and knowledge of infantile hygiene widely disseminated, no doubt the disparity to which we have alluded might be materially diminished.

This copy of the *Practitioner*, carrying out its missionary endeavor, adds a pharmacopeia for infants, which gives the exact ingredients of various preparations used for infants. Finally,

a brief statement of the best books on diseases of children is appended, among which the works of Holt and Rotch are given generous recognition. As we indicated at the outset, we are inclined to think that medical journalism fulfils one of its most definite aims in presenting to the medical public a comprehensive epitome of the situation regarding any one branch of medicine. That it is not done more often is no doubt due to the difficulty of collecting a large series of worthy articles pertaining to one general subject.

LIFE AS LIVED IN NEW YORK.

The statistical method is always interesting, if at times inaccurate. A New York daily paper has recently taken upon itself to ascertain certain facts regarding the population of the city in an effort to show the rapidity with which New Yorkers live. Admitting possible inaccuracies, it is nevertheless edifying to realize how the events of life and death follow each other in that city.

It is stated that a child is born every six minutes and every seven minutes there is a funeral. Nearly one hundred thousand infants were born during the last year and nearly eighty thousand persons died. Tuberculosis claims a victim every twenty-eight minutes, and every fourth person dies from tuberculosis of the lungs. It is a somewhat surprising fact that a New Yorker is killed every hour and three quarters as the result of accident. If the reasoning be just, therefore, it is twenty-five hundred times safer to travel by rail than to remain within the boundaries of the city. Some one drowns in New York every eight hours; some one is burned to death every fourteen hours; and street car or other accidents of such character lead to a death every six hours. Suicide claimed during the last year eight hundred and fifty-three individuals, most of whom met their death by poison. Such an attempt was made once in every twenty-four hours. Suffocation by gas was next in popularity, and suicide by shooting, although a popular method, was far less so than either of the preceding. April is the month of suicides, the average being one every eight hours, whereas in winter the average is much less. Murders occur in New York once every two days, with an attempt to kill every eight hours. One murder every two weeks baffles solution, and an unfortunate person is buried every two hours in Potter's field. Marriage occurs every thirteen minutes, but one wedding in every forty leads later to divorce. This, however, is not a fair statement of facts, inasmuch as many seek relief from marital infelicity outside of the city. Presumably one out of every twenty is legally ended either in the city or elsewhere. In spite of this unfortunate showing, three children on an average are born for each wedding.

Still more remarkable are the immigration figures. One person enters the city every forty seconds, and of all who come from Europe, one out of four remains in the city, which shows that the city increases nearly three times as fast from immigration as from births. The rate of building is also a matter for contemplation. A house of some sort is erected every fifty-one minutes, and during the year under consideration over twenty thousand structures were erected. It is estimated that the people of all New York expend $4.65 a second for new buildings. Fires occur on an average once every forty-eight minutes, with a loss at the rate of $25 a minute. Turning to the relations of the city to the government, it appears that the city pays the government more than $13,000,000 for handling its letters. It writes on an average day two hundred and twelve letters a minute, two thirds of which are in the far down-town section. The police make an arrest every three minutes and take some one to a station house for drunkenness every ten minutes. A new prisoner is brought to the Tombs every two hours, and every five hours one is sent from the city to State's Prison. The lawyers are also active. A new suit is entered every ten minutes, and one is brought to trial every fifteen seconds. To accomplish this work, New York produces a new lawyer every twelve hours. Railroad trains arrive in the city somewhat more frequently than one a minute, and a vessel sails out of the harbor more frequently than once an hour.

However valuable such statistics may be, they at least give one an idea of the extraordinary activities which a city like New York presents. To the sociologist they should be of considerable value, and to the statistician such manipulations of figures should prove a rare treat. To the ordinary citizen they serve, at least, as an entertaining commentary on modern life.

MEDICAL NOTES.

Transvaal Medical Journal. — This journal, to which we have previously alluded, has begun publication as a monthly. The arrangement of the journal is that practised by one of our Ameri-

can contemporaries of placing the editorials first, following them by original contributions and other matters of local and general medical interest. The number before us, which is the second to appear, gives promise of a journal practical in scope and of value to the profession.

Appointment of Professor Nothnagel's Successor. — It is stated that the chair of medicine, formerly occupied by Professor Nothnagel, has been filled by the appointment of Professor Jaksch of Prague.

President of the British Medical Association. — The British Medical Association will hold its meeting next year in Toronto, Canada, under the presidency of Dr. Reeve, dean of the medical faculty of Toronto University.

Columbia University Medical School. — The enrollment of the entering class of the Columbia University Medical School is announced as six less than in 1904. Not only have the requirements for admission been increased at this school, but the tuition fee has been raised to $250.

Weather of 1905. — According to the *Bulletin of the Chicago Health Department*, the "freak" weather of 1905, with an accumulated deficiency of 358 degrees of temperature on Aug. 1 and an excess of rainfall on Sept. 18, is responsible for the heavy increase of mortality among infants and young children during the summer just ended. Since the August date the temperature has been unseasonably warm — the record for the last of September being 22 degrees higher than the normal of thirty-five years.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, Oct. 11, 1905, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 27, scarlatina 14, typhoid fever 39, measles 18, tuberculosis 53, smallpox 0.

The death-rate of the reported deaths for the week ending Oct. 11, 1905, was 16.52.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, Oct. 7, 1905, is 196, against 188 the corresponding week of last year, showing an increase of 8 deaths, and making the death-rate for the week 16.27. Of this number 95 were males and 101 were females; 192 were white and 4 colored; 128 were born in the United States, 66 in foreign countries, and 2 unknown; 37 were of American parentage, 135 of foreign parentage, and 24 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 23 cases and 1 death; scarlatina, 17 cases and no deaths; typhoid fever, 33 cases and 5 deaths; measles, 22 cases and no deaths; tuberculosis, 46 cases and 23 deaths; smallpox, no cases and no deaths. The deaths from pneumonia were 15, whooping cough 1, heart disease 17, bronchitis 6, and marasmus 7. There were 9 deaths from violent causes. The number of children who died under one year was 49; the number under five years, 65. The number of persons who died over sixty years of age was 53. The deaths in public institutions were 57.

Cases of cerebrospinal meningitis reported for the week were 2 and 4 deaths.

The Typhoid Epidemic in Springfield, Mass. — The typhoid epidemic which has prevailed in Springfield since August has been under investigation at the hands of Dr. George B. Magrath of the State Board of Health. The results of this study into the situation seem to show that in all probability the fruit venders of the city are responsible for the disease rather than the usual sources of infection, milk or water. The investigation of the part of the city in which the fruit venders live showed a deplorable condition of filth and uncleanliness.

NEW YORK.

A Bequest. — Among a large number of charitable bequests left by the late Anthony Oechs, a wealthy New York merchant, is one of $5,000 to St. Joseph's Hospital for Consumptives, in the Bronx.

A New Laboratory. — The work of the University and Bellevue Hospital Medical College has been greatly facilitated by the completion of a fine new laboratory. This building, the erection of which was authorized last year by the University Council, is six stories in height and harmonizes architecturally with the main building of the school, which it adjoins.

The Census of Greater New York. — The Health Department has practically completed its census of the boroughs of Manhattan and the Bronx, and the figures indicate that the present population of the entire city is now about 4,342,000, showing an increase of 904,808 in the last five years. In the report of the department to the mayor for the first six months of 1905, it is stated that there was a gratifying diminution in

the number of cases of contagious disease reported, the total number being 17,456, as against 39,114 for the corresponding period of last year.

The Infants' League. — There is now being organized by a number of philanthropic women a society to be known as the Infants' League of New York, the object of which is to provide for the wants of young infants whose mothers are too poor to properly care for them. After their confinements, whether in hospital or at their own homes, such mothers will be furnished free with a sanitary crib, bedding, clothing, etc., and in cases where the children are not nursed at the breast, with suitable appliances for feeding and a regular supply of milk. It is hoped that this useful aid will induce many women to keep their infants with them who without such assistance would find it necessary to place them in asylums or under the doubtful care of strangers. As a result, it is believed that the infant mortality of the city will be materially reduced, while the health and welfare of the baby population of the tenements will be generally promoted. The League is to be under the direction of a board of fifteen prominent ladies, and physicians look upon the scheme as one of great practical importance and one which will meet a real need in the community.

Mortality Reports. — The weekly reports of the Health Department show that during the month of September the mortality in the city represented an annual death-rate of 16.61, as against 17.80 in August and 17.06 in September, 1904. The corrected death-rate, excluding non-residents and infants under one week old, was 15.75. Among the diseases in which there was a diminished fatality were the following: The weekly average of deaths from measles decreased from 7.75 in August to 3 in September; the weekly average from whooping-cough, from 13.5 to 7.25; from epidemic cerebrospinal meningitis, from 15 to 11; from typhoid fever, from 23.25 to 21; from bronchopneumonia, from 48 to 41; from acute bronchitis, from 16.75 to 15.5; from pulmonary tuberculosis, from 150.5 to 142.5; from diarrheal diseases, from 296.25 to 179.75; and from diarrheals under two years of age, from 279.25 to 160. Among the diseases which showed an augmented mortality were the following: The weekly average of deaths from scarlet fever increased from 1.75 to 3; from Bright's disease and nephritis, from 98 to 102; and from organic heart diseases, from 80.5 to 82.25. In the last week in September the city's death-rate reached the lowest figure of the present year, 15.75, and during the same week there were but 5 deaths reported from epidemic cerebrospinal meningitis, the lowest number in any one week since the third week in January last. In the condensed quarterly report of the Bureau of Records of the Health Department for the quarter ending June 30, 1905, just issued, the total number of deaths in the city during the second quarter of the year is given as 18,296. This, on an estimated population of 3,948,191, shows an annual death-rate of 18.60 per thousand, as compared with an average number of 17,917 deaths for the corresponding period of the preceding five years, which, on an estimated population of 3,636,924, gives a death-rate of 19.77, indicating a decrease of 1.17 points. The decrease is shown in a marked falling off in the number of deaths from measles and a relative decrease in the acute respiratory diseases. The absence of any public calamity, such as the "Slocum" disaster, which occurred in the corresponding quarter of 1904, is shown in a decrease of 926 in the deaths by accident.

Miscellany.

A SANATORIUM VILLAGE.

An interesting development of the sanatorium principle appears to have taken place near Lille, France, a district which is one of the centers of the coal-mining industry. The employers of labor have at their own cost erected for their workers a sanatorium which is more of the nature of a colony than of an institution. There is a large building for single women and another for single men, but the unique feature of the establishment lies in the provision of a group of twenty-four villas for married people with families. It is intended that a worker who contracts tuberculosis shall not be deterred from treatment by being separated from his family, nor that the family shall suffer by being deprived of his society. The regulations of the sanatorium only enjoin six hours' treatment a day by fresh air and rest, so that it is not likely to find favor with those who believe in the whole hog or nothing. It is not a little remarkable how many modifications have been introduced into sanatorium treatment since it first became fashionable; each institution and each medical superintendent is a rule unto itself, the name "sanatorium" covering all the different methods. Just as Weir-Mitchell treatment has degenerated from a six months' course of solitary confinement to, in some cases, a few weeks' rest and rubbing, so Dr. Walther would hardly recognize his system as carried out by some of his professional followers. — *Medical Press.*

Correspondence.

LETTER FROM BRUSSELS.

THE FIRST INTERNATIONAL SURGICAL CONGRESS.

SEPT. 28, 1905.

Mr. Editor: The First International Surgical Congress was regarded as an experiment even by its promoters. It proved, however, not only a success, but even more — it may be regarded as a surgical event. A scientific forum, where a carefully considered discussion of studied reports thoroughly prepared by selected authorities is referred to chosen experts, manifestly offers a standard for medical societies which it is desirable to emulate. It can hardly be expected that the first meeting of a new society could at once reach this high plane, but that such was the purpose of the organization was made manifest at the recent meeting at Brussels, and enough was accomplished to show that it was not impossible to accomplish in time the desired result, with a continuation of the combined efforts of the broad-minded and energetic men who planned the association.

To any one who has taken part in several of the larger international medical meetings in the larger capitals of Europe, it is clear that the scientific purpose of meetings is seriously impaired by the size of a great gathering and the fact that the greater part of the members are in large centers visitors and sightseers rather than scientific investigators. The advantage of a smaller center was manifest at Brussels, which, though not without "sehenwürdigkeiten," yet furnished these in such moderation that they served as diversions rather than distractions. An automobile trip to the battlefield of Waterloo could serve as a respite from surgical statistics and not as a rival attraction; the walks in the quaint parts of the interesting and historic city, the parks with their outdoor concerts are not so extensive as to prevent serious work by those so inclined. Brussels is a thoroughly comfortable city, with ample evidences of a highly developed civilization, which is in itself a stimulation and a pleasure.

The formal opening of the congress partook somewhat of the inevitable character of an uninteresting function, which is unavoidable on such occasions. Perhaps in the future medical delegates may be instructed not to make speeches, and may not expect to be officially welcomed, but at present this must be expected very much as the scraping and tuning of violins in the usual theatrical orchestra is to be endured as the necessary preliminary. The Academy of Sciences, where the meetings were held, was a thoroughly dignified, if somewhat too ornate building, and answered the purpose of such a convention, except that the acoustic properties of the halls were more suited to the addresses of trained public speakers than to the informal discussions of scientists.

The exhibit of surgical instruments, which mars many of our state and national medical associations, was here also rather too obtrusive and deserved perhaps to be chased, like the money changers, from the temple devoted to surgical science more than to the art of surgical practice. But, with the exception of these few criticisms and the fact that the secretary's office and the post-office department showed evidence of a lack of perfect preparation and organization, even the fault-finding visitor would be compelled to praise the high quality of the meetings.

Professor Kocher gave a quality of dignity to all the meetings, which at once removed the congress from the level of the art and placed it on the high plane of scientific surgery. The papers were, as a rule, of the proper character, and the excessive self-assertion and the emphatic relation of limited personal experience were not as prominent at the meetings as is unfortunately sometimes the case. The excellent ability of French surgeons in presenting the facts they had collected was noticeable, as well as the thoroughness of the methods of the Germans. It cannot be said that the papers themselves were superior to those of the American Surgical Association at its best, but in some respects the presentation of the papers showed a training in arrangement of facts and in excellence of diction, which is often lacking with us. Even to a hungry man properly served viands with suitable and well-prepared sauce is preferable to crude food no matter of how excellent a quality.

The exact value of the congress in contributions to surgical science can only be judged after a careful study of the reports. It is probable that, although this is undoubtedly great, it is not as great as may be derived from future meetings after the members have become more trained to work together and for a definite purpose. An economy of time could be gained by a little judicious pruning of the program, and the hours assigned to visits to the local hospitals and the operations could have been, perhaps, better utilized by surgeons of large experience. The great benefit, however, from the congress, as from all congresses, came from the direct contact and conversation with men of achievement from different and widely-separated countries, and ample opportunity for this was afforded.

The social side of the congress was carefully and lavishly planned, and thanks without stint are due to the Belgian and Brussels members of the congress for their very generous hospitality. It is to be hoped that at the next meeting in three years, American and English surgeons may show greater activity as participants and give better evidence than was shown at the first meeting, of their interest in the purpose of the society.

One feature of the meeting needs especial mention for its unusual character. A reception at the superb historic Hotel de Ville of Brussels was in itself worth a long journey to the traveler, whose imagination had every opportunity for enjoyable exercise in a walk through the rooms filled with the superb old tapestries, portraits and rare carvings of this wonderful treasure house of history and art. A look from the balcony, where Charles the Fifth, Margaret of Parma and Alva must have watched the tumults, the executions, the repressions, in the old square guarded by the unchanged old guild houses, brought a flood of feeling of the extraordinary progress in thought and achievement which has accompanied the emancipation of human effort. Three centuries certainly looked down upon the sight-seer with the unquestionable belief that the next centuries were pregnant with equal, if not greater, progress. From Vesalius to the anatomist and surgeon of the day seems an almost immeasurable advance, but the field for greater progress stretches forward in a limitless vista.

The visitor could intensify this flight of professional imagination and prophecy if, after leaving Brussels, he visited the Institut de Pasteur in Paris with its impressive tomb of the great modern scientists. It is but a short walk from here to the Invalides, with the famous tomb of the great conqueror of the eighteenth and early nineteenth century, where all the world worships the genius and glory of Napoleon. As the visitor stands at the portico of the Invalides, he sees in front of him, at a short distance, a fine statue with the best of the admirable modern French sculpture, showing the achievements of Pasteur, that by his hand the stricken child is saved from the scythe of the destroyer; that the vintages may be joyous; the shepherd free from care. It is inevitable that in the future unmeasured reverence will be paid to the achievements of this Genius of France, who can perhaps be called the most beneficent of all conquerors.

The grand architecture of the Hotel des Invalides, which covers the tomb of Napoleon, will always impress the man of the street more than the simple building which protects the fittingly designed tomb of Pasteur, but the beautiful angels, designed in the classic art of Pradier, which mourn over the remains of the great Corsican, the last, let us hope, if the greatest of the long line of condottieri, the soldiers of fortune, cannot tell coming generations a story of achievement more appealing to human sympathy than that depicted by the wonderful modern art of Falguière in the groups at the base of the statue of the truest and greatest of Frenchmen — Pasteur. Future surgical congresses cannot fail to record, we believe, the results of future achievements equally great.

The increasing use of spinal anesthesia is noticeable in continental surgery. At Bonn stovaine, the comparatively new French substitute for cocaine, has been used with great satisfaction in five hundred cases and without

accident. To see an operation for hemorrhoids with the patient smiling happily, or a laparotomy with the patient contentedly talking with the attendants, is certainly unusual to one accustomed to the use of heavy anesthesia. The method has manifest advantages and disadvantages, even granting perfect safety. It is useless in the surgery of childhood, but beneficial especially in old people who dread the apparent death of narcosis. Conservatism in the treatment of the larger joints affected with tuberculosis, in place of excision; graduated active rather than passive movements in correcting anchylosis and deformities; the Bier vacuum treatment of non-tuberculous and septic joint affections; tendon transference, with and without silk strands, are among the interesting features of recent German surgery.

The Brussels Surgical Congress demonstrated fully that the surgical world is an interesting, an attractive one, not so large but that the experience gained in one region should be shared quickly by all; that the surgical guild is one of the finest imaginable — active, powerful, influential, with high purpose for great good, and full of good fellowship for all worthy of membership. To be a well-equipped surgeon to-day it is necessary to keep in close touch with the work of surgeons everywhere. For this a working knowledge of three languages is necessary, and among these French is by no means the least important.

Very truly yours,

B.

SCOPOLAMINE.

Palmer, Mass., Oct. 9, 1905.

Mr. Editor: The universally favorable reports on the use of scopolamine, the positive declarations as to its safety, pleasantness and efficiency, lead me to report the results, in part, of experiments I have made.

So far as I can learn, no one has as yet reported any failure or disagreeable results. So positive have been the statements in favor of this agent in combination with morphine, that even the lay press has taken it up and heralded this new anesthetic.

It seems to me that the value and safety of this or any other drug of so potent a class should be assured before it is put forth as a safe, pleasant agent. It would be a most disagreeable and embarrassing thing for any physician to use scopolamine and morphine in the way suggested by the writers, should he get some of the results I have in my experiments. Reading these reports and having found in my use of weak solutions of scopolamine in ophthalmic practice, by instillation in the eye, that it was apt to produce in a per cent of cases intense cerebral excitement and sometimes even absolutely toxic effects, I decided to try its action by sub-cutaneous injection, on animals.

The experiments included eleven animals, six cats and five dogs. I have not as yet employed it on the human being in this way. The symptoms varied with the different animals and different dosage, but many of the manifestations were common to all animals and dosage. One death ensued, the result of a comparatively small dose of the drug, 1-150 grain of scopolamine, ¼ grain morphine.

This was given to a full-grown female cat — pregnant. An increase in blood pressure was soon apparent. Later, a decrease of pressure and an increase of pulse rate. Later still, a decrease of rate and pressure, and finally death, in two hours and forty minutes.

The first effects noted were dryness of the mouth and difficulty in swallowing, indicated by the animal extending its tongue and trying to swallow. Refused water. This dryness, etc., was noted in seven minutes. In eight and one-half minutes the cat vomited, nausea lasting about six minutes. By this time, fifteen minutes, the pupils were fully dilated and vision was, naturally, much disturbed. Much excitement was displayed and in twenty-five minutes the cat commenced to "see things." From that time there followed an active rat hunt, which lasted until exhaustion prevented further effort. The abdominal muscles became tense at the time of nausea and remained so until death. On the other cats, the same train of symptoms appeared, with modifications, after the administration of this combination of drugs, with the exception of the fatal termination.

In one case 1-50 grain of scopolamine was given. This dose was followed by a longer period of maniacal excitement, but perfect recovery followed in about twenty-eight hours. Dogs were more tolerant and seemed to be more nearly comfortable under the drug. However, all the animals, cats and dogs, were much distressed by it; less so when the injections of morphine preceded those of scopolamine about forty minutes, the excitement being less intense and of shorter duration.

Dogs usually stand chloroform anesthesia very poorly, but seem to stand it well after the administration of scopolamine and morphine. In addition to this, it took less chloroform to produce anesthesia than it otherwise does and they recover from it rapidly and with little shock. Seelig mentions this and further says: "I can say without reserve that no results have been obtained by any other method which can be compared with those which this method has yielded. The morphine lessens the susceptibility to shock, the scolopamine raises blood pressure and thus aids in preventing shock."

I am willing to concede the truth of the above so far as the tendency to prevent shock is concerned. Regarding the comparison with other methods, I seemed to get just as good results from morphine and atropine, administered one-half hour before anesthesia, and I do not think atropine is such an active delirient. I gave general anesthetics to three dogs during the stage of excitement following scopolamine injection, ether in two cases, chloroform in one. The anesthesia was profound and quiet and free from salivation in all cases; but after maintaining the anesthesia fifteen minutes and allowing them to come to, the excitement returned, quite unabated.

The case of the cat dying from 1-150 grain of scopolamine might be considered with that of a dog to which was given ½ grain each of scopolamine and morphine, with the result of complete anesthesia and sleep in fifty minutes. The dog's condition, however, was critical in the extreme and remained so for twenty-four hours. In about forty-eight hours he recovered and except for a little apparent stupidity, seemed all right.

1. In every case there was discomfort from dryness of the mouth and difficult swallowing.
2. There was complete mydriasis in every case and disturbed vision.
3. There was vomiting in every case.
4. A most marked dyspnea in every case.
5. A marked excitement in all, and in some a maniacal excitement.

In view of these conditions, this combination hardly comes up to my idea of a pleasant, safe and efficient substitute for the present accepted mode of inducing general anesthesia, for in no case did I secure a safe anesthesia which would have been useful. Considered as a prophylactic it may be valuable as a preventive of shock, but the rise of blood pressure is as well secured, apparently, by atropine and without many of the disagreeable accompaniments of scopolamine. Then, too, morphine acts correctively or antagonistically to atropine and synergistically with scopolamine. Scopolamine in small doses may have a place in this particular field of medicine, but in view of the facts my experiments have given me, viz., — a small dose may be fatal in one case and yet another subject take a very large dose without particularly bad effects, — I would say, be careful.

I think the dosage advocated by some writers is beyond the line of absolute safety for general application. I have found this drug valuable in my ophthalmic practice but consider its usefulness in its new field, general anesthesia, very limited. The tendency of enthusiastic workers in medical advance to let their enthusiasm override their judgment need not be mentioned here. But when that enthusiasm takes up a drug of the toxicity of scopolamine, and causes it to be thought of in fairly large dosage as a safe substitute for ether, etc., it is time to ask pause till adequate trial shall demonstrate its exact place in medicine and its safe dosage.

Truly yours,

George A. Moore, M.D.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, SEPT. 30, 1905.

CITIES.	Population.*	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diphtheria and croup.	Typhoid Fever.	Cerebro-spinal Meningitis.
New York	3,908,644	1,192	401	29.78	9.48	1.51	2.60	.42
Chicago	1,998,750	481	156	33.68	7.07	2.49	1.87	—
Philadelphia	1,467,968	384	110	23.43	9.89	1.04	3.64	—
St. Louis	633,606	—	—	—	—	—	—	—
Baltimore	543,229	197	64	34.01	3.55	2.03	5.57	—
Cleveland	444,251	—	—	—	—	—	—	—
Buffalo	400,645	—	—	—	—	—	—	—
Pittsburg	362,403	—	—	—	—	—	—	—
Cincinnati	338,377	—	—	—	—	—	—	—
Milwaukee	325,990	—	—	—	—	—	—	—
Washington	300,776	—	—	—	—	—	—	—
Providence	196,744	50	15	20.00	6.00	4.00	4.00	—
Boston	589,598	187	91	23.52	8.55	.53	2.67	1.60
Worcester	127,983	31	12	22.58	3.23	—	3.23	3.23
Fall River	105,697	31	17	45.16	6.45	3.23	—	—
Cambridge	97,436	34	8	32.35	14.71	—	—	—
Lowell	94,845	21	10	19.05	9.52	—	4.76	—
Lynn	77,025	24	7	16.67	4.17	—	4.17	4.17
New Bedford	74,821	16	10	37.50	6.25	—	—	—
Springfield	73,484	18	3	22.22	—	—	5.56	—
Lawrence	69,989	25	10	32.00	8.00	—	—	—
Somerville	68,188	14	9	14.29	14.29	—	—	—
Holyoke	49,124	18	11	22.22	11.11	5.56	—	—
Brockton	47,782	7	2	—	—	—	—	—
Malden	37,986	5	1	—	20.00	—	—	—
Haverhill	37,818	14	3	—	7.14	—	—	—
Salem	37,806	8	4	—	—	—	—	—
Chelsea	37,377	14	6	—	14.29	—	—	—
Newton	36,694	11	1	18.18	—	9.09	—	—
Fitchburg	33,017	10	6	—	—	—	—	—
Taunton	30,952	8	2	12.50	—	—	—	—
Everett	29,108	9	3	22.22	—	11.11	—	—
Quincy	28,087	10	1	20.00	—	10.00	10.00	—
Waltham	26,239	6	2	50.00	—	—	50.00	—
Gloucester	26,006	—	—	—	—	—	—	—
Pittsfield	25,000	6	4	33.33	16.67	—	—	16.67
Brookline	23,424	3	2	—	—	—	—	—
North Adams	23,125	7	0	14.29	—	—	—	—
Chicopee	20,187	5	3	20.00	—	20.00	—	—
Northampton	19,943	10	1	20.00	—	—	—	—
Medford	19,638	5	—	—	20.00	—	—	—
Beverly	15,223	7	1	—	—	—	—	—
Newburyport	14,678	8	1	25.00	—	—	25.00	—
Hyde Park	14,492	8	3	37.50	—	—	—	—
Woburn	14,401	4	2	—	25.00	—	—	—
Melrose	14,394	2	1	—	—	—	—	—
Leominster	14,390	—	—	—	—	—	—	—
Marlboro	14,072	1	0	—	—	—	—	—
Westfield	13,609	4	—	—	—	—	—	—
Clinton	13,103	6	4	16.67	—	—	16.67	—
Peabody	13,097	—	—	—	—	—	—	—
Attleboro	12,792	—	—	—	—	—	—	—
Revere	12,647	3	2	33.00	33.33	—	—	—
Adams	12,462	3	2	66.67	33.33	—	33.33	—
Milford	12,105	—	—	—	—	—	—	—
Gardner	11,981	4	2	—	—	—	—	—
Weymouth	11,585	—	—	—	—	—	—	—
Framingham	11,549	—	—	—	—	—	—	—
Watertown	11,202	2	1	50.00	—	—	—	—
Plymouth	11,118	—	—	—	—	—	—	—
Southbridge	10,947	10	4	70.00	10.00	10.00	—	—
Wakefield	—	2	—	50.00	50.00	—	—	—

* As last reported.

Deaths reported, 2,935; under five years of age, 952; principal infectious diseases (smallpox, measles, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 826; acute lung diseases 239, consumption 334, scarlet fever 7, whooping cough 15, cerebrospinal meningitis 11, smallpox 1, erysipelas 2, puerperal fever 8, measles 3, typhoid fever 77, diarrheal diseases 320, diphtheria and croup 48.

From whooping cough, New York 3, Chicago 4, Philadelphia 2, Baltimore 6. From scarlet fever, New York 5, Chicago 2. From measles, New York 2, Baltimore 1. From cerebrospinal meningitis, New York 5, Boston 3, Worcester 1, Lynn 1, Pittsfield 1. From erysipelas, Philadelphia 1, Boston 1. From smallpox, Chicago 1. From typhoid fever, New York 24, Chicago 9, Philadelphia 14, Baltimore 11, Providence 2, Boston 5, Waltham 3, Newburyport 2, Worcester, Lowell, Lynn, Springfield, Quincy Clinton and Adams 1 each.

In the seventy-six great towns of England and Wales, with an estimated population of 15,609,377, for the week ending Sept. 23, 1905, the death-rate was 13.8. Deaths reported 4,124; acute diseases of the respiratory organs (London) 57, whooping cough 60, diphtheria 39, measles 31, smallpox 0, scarlet fever 40.

The death-rate ranged from 4.2 in Handsworth to 22.6 in Burnley; London 13.3, West Ham 15.9, Brighton 13.1, Southampton 10.9, Plymouth 12.1, Bristol 14.7, Birmingham 13.2, Leicester 17.4, Nottingham 17.0, Birkenhead 13.0, Liverpool 17.2, Wigan 19.3, Bolton 17.3, Manchester 16.2, Salford 13.3, Halifax 15.9, Bradford 13.6, Leeds 14.5, Hull 13.9, Sheffield 12.9, Newcastle-on-Tyne 15.2, Cardiff 13.0, Rhondda 10.4, Merthyr Tydfil 19.8, Hornsey 6.8, Great Yarmouth 9.0.

METEOROLOGICAL RECORD.

For the week ending Sept. 30, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

DATE	Barometer.	Thermometer.			Relative humidity.			Direction of wind.		Velocity of wind.		We'th'r *		Rainfall in inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A.M.	8.00 P.M.	Daily mean.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	
S. . 24	29.93	58	68	48	61	68	64	W	S W	8	12	C.	F.	0
M. 25	29.89	59	69	46	58	58	58	N W	W	24	12	C.	C.	0
T. . 26	30.07	49	56	43	58	60	59	N W	N W	18	8	C.	C.	0
W. 27	30.01	52	62	41	54	65	60	S W	W	5	8	O.	C.	T.
T. . 28	29.96	62	75	50	67	61	64	W	W	8	8	C.	C.	0
F. . 29	30.14	56	66	52	76	80	78	N	N E	4	11	C.	C.	0
S. . 30	30.10	60	66	55	80	91	86	S W	S E	8	7	O.	O.	0
☞	30.02		64	48			67							0

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Means for the week.

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING OCTOBER 7, 1905.

J. M. MOORE, passed assistant surgeon. Orders of Sept. 27, modified; ordered to the navy recruiting rendezvous, New York, N. Y.

T. C. BLACKBURN, acting assistant surgeon. Detached from duty with naval recruiting party No. 2 and ordered to the naval recruiting rendezvous, St. Louis, Mo.

G. P. BRADLEY, medical director. Detached from the naval hospital, Washington, D. C., Oct. 15, and ordered to the navy yard, Portsmouth, N. H., and to additional duty in command of the naval hospital at that place.

D. DICKINSON, medical director. Detached from the navy yard, Portsmouth, N. H., and ordered to command the naval hospital, Washington, D. C.

H. L. LAW, surgeon. Retired, detached from the naval recruiting rendezvous, Boston, Mass., and ordered home.

F. E. MCCULLOUGH, surgeon. Detached from the "Pensacola" and ordered to the "Albatross."

E. O. HUNTINGTON, surgeon. Detached from the "Albatross" and ordered to Washington, D. C., and report at the Navy Department.

A. STUART, passed assistant surgeon. Detached from the naval hospital, Chelsea, Mass., and ordered to the "Pensacola" and to additional duty at the naval training station, San Francisco, Cal.

R. H. MICHELS, assistant surgeon. Ordered to the naval recruiting rendezvous, Kansas City, Mo., Oct. 9.

B. ELMORE, assistant surgeon. Detached from the naval hospital, Washington, D. C., Dec. 1 and resignation accepted to take effect same day.

SOCIETY NOTICE.

NEW ENGLAND HOSPITAL MEDICAL SOCIETY. — The regular meeting of the New England Hospital Medical Society will be held Thursday, Oct. 19, 1905. Section on Pathology and Bacteriology, Dr. Mabel Austin, Chairman. The paper of the evening will be given by Dr. Wm. T. Councilman. Subject: "Tuberculosis considered in its anatomical relations." Illustrated by lantern slides.

BLANCHE A. DENIG, M.D., *Secretary*.

RECENT DEATH.

DR. WILSON T. BASSETT, of Cooperstown, N. Y., died on Oct. 3 at the age of eighty-four years. He was graduated from the Albany Medical College in 1844.

Original Articles.

TWO CASES OF BILATERAL BIRTH PARALYSIS OF THE LOWER-ARM TYPE.

BY JOHN JENKS THOMAS, A.M., M.D., BOSTON.

CASES of paralysis of the arm following a difficult labor have long been known and carefully studied, but the great majority of these are of the upper-arm type, the muscles affected being the outward rotators of the humerus, especially the supra- and infraspinatus, the deltoid, the biceps and brachialis anticus, and the supinators, particularly the supinator longus, though many of the cases, especially if seen during the early weeks, show a paralysis of the extensors of the hand, and every now and then a case is seen in which the paralysis of the arm is a total one. In the greater number of cases in which the paralysis is total improvement takes place in some muscles, and the muscles remaining affected are those just mentioned, with or without the addition of some of the muscles of the forearm. Occasionally, however, a case is seen in which the paralysis of the arm is of the lower-arm type, such as is seen more often after direct traumatism to the brachial plexus, and has been described and studied by Mlle. Klumpke and many others since. A search of the literature accessible to me shows that cases of this type of paralysis dating from birth and presumably caused by injury of the brachial plexus during labor are rare, and in most instances were the remains of a preceding total paralysis of the arm. Among these cases I have been able to find but few in which both arms were affected, as was the case with the patients whose cases are reported in this paper.

CASE I. J. M., a boy, came to the Children's Hospital for the first time on Dec. 7, 1902, at the age of about seven months. There were three older children in the family, all being normal. The mother about two months before delivery, had a heavy fall, striking on the back, but this was not followed by flowing, though she felt poorly, and was unable to do her harder work, such as washing.

The labor was difficult, and I am indebted to Dr. J. M. Wells, of Chelsea, for a clear account of this, which he gave in a letter to Dr. Bullard, to whom I am indebted for permission to report these cases. Dr. Wells writes that on May 30, 1902, upon his arrival at the house he found the woman had been in hard labor for twelve hours. There was a face presentation with the chin posterior. Chloroform was given to complete relaxation, and the head pushed slightly up, but it could not be flexed. Then traction with forceps was tried, but as there was absolutely no "give" this was quickly discarded, and a version was attempted. This failed because of the contraction of the uterus. During this attempt, however, the head had been pushed back so that the chin could be pushed up a little, and then by holding the chin an attempt was again made to convert the position into an occiput by the action of the pains. The face, however, came down again, but the same procedure was repeated, and on the third trial the occiput engaged, and the labor proceeded normally, the right shoulder presenting at the pubes. The child was narcotized by the chloroform but after slight artificial respiration came around all right. It was at this time that the paralysis of the arms was noticed. Dr. Wells also adds: "During one of the rests from the anesthetic, while I held my hand in the vagina with fingers against the chin using more or less pressure I heard and felt a decided click or snap. At first I though the child's neck was broken, but when the head was born I examined for that and found it intact."



CASE I.

The physical examination on Dec. 7, 1902, showed the arms of fair circumference, but the forearms tapering down to the wrist, probably from atrophy of the muscles, and the hands hanging flaccid, the wrist joints being abnormally relaxed. There was a tendency to extension of the hands at the wrist, and the child could not grasp with either hand. The arms were held abducted almost at right angles with the body. There was no especial resistance to passive motion at the shoulders. The forearms were held flexed on the arms, and passive extension at the elbow was resisted with considerable force. The only voluntary motion of the upper extremities seemed to be elevation of the arms, and flexion of the forearms. No triceps reflex was obtained. Sensation was present and probably normal for the perception of the prick of a pin. The frontal bone was more prominent than the parietal bones at the coronal suture, especially on the right. The lower extremities and knee jerks were normal, as well as the movements of the head and neck.

On Feb. 4, 1903, there was noted slight power of movement in all the fingers of the left hand except the middle finger, and also in the thumb and index finger of the right hand.

On April 19, 1903, the mother stated that on the day of birth the hands were swollen and blue, and it was noticed that the arms hung limp from the shoulders. The arms were first moved at the shoulders at the age of four weeks. The child moved the head from the first, and did not cry when it was moved passively. No trouble with the legs had been noticed at any time, and no trouble with the bladder, such as constant dribbling of urine, except that on one occasion when three weeks old the baby went six hours without passing urine and was crying, but when hot cloths were

applied to the abdomen he passed urine and stopped crying.

Examination at this time shows paralysis of both arms. The shoulders are elevated normally, and the arms abducted from the body, and the flexion of the forearms is fair. The wrists can be slightly extended, but deviate then to the ulnar side. The supinator longus can be felt to contract. The arms are held abducted, and the forearms flexed and supinated. The forearms cannot be extended actively. The hands are held extended and deviated towards the ulnar side, the fingers extended at the proximal phalanges, and flexed at the terminal ones. The thumbs are abducted to the plane of the hand. The little fingers are less flexed than the others. There is well marked atrophy of the muscles of the forearms especially of the flexors, and of the muscles of the thenar and hypothenar eminences. The measurements are:

Circumference right upper arm	13.5 cm.
Circumference left upper arm	13.3 cm.
Circumference right forearm	13.2 cm.
Circumference left forearm	13.0 cm.

Electrical examination shows that the biceps, deltoids and supinator longus of both arms respond well to the faradic current, while the triceps, all the muscles of the forearms and hands, give no response. To the galvanic current there is a quick contraction in the biceps and deltoids, that to the cathode being greater than that to the anode, while in the triceps there is no response. There is a somewhat slow contraction with the anodal closure, better than the cathodal one, in the flexor carpi ulnaris, flexor sublimis digitorum, and abductor minimi digiti on both sides.

The examination of the rest of the body, particularly the spine and the legs, showed perfectly normal conditions.

The condition of this child at the present time, May, 1905, shows perfectly normal gait, the child learning to walk at about one year, and the development has been normal in every way. The paralysis of the arms has remained nearly the same, except that the grasp has gained in strength, especially on the left, but this seems due to recovery of power in the long flexor muscles, as the paralysis and wasting in the small muscles of the hand is still marked, and pronation of the forearms, flexion of the hands, and extension of the forearms has not improved, in spite of fairly regular treatment with massage and electricity.

CASE II. The patient, a girl, F. M., was brought to the Children's Hospital for the first time on Jan. 11, 1905, when three months old. There are three older children, all unaffected. This child was born at full term. During the latter part of the pregnancy the mother was frightened by a child falling from a window. Labor was severe and ether was given. It had been noticed that the child had not moved the arms naturally from birth.

The physician kindly furnished me with what notes he had of the labor. This was on Sept. 26, 1904. The labor was delayed and examination showed the os dilated to a diameter of two inches, a face presentation with the chin anterior. Ether was given, the os dilated, the shoulders were rotated, and the head flexed till the position became that of a left anterior occiput. Then the ether was removed, but still no progress was made, and a constriction ring formed. Ether was again given, and forceps applied and the head brought down into the pelvis. Progress was impeded by an edematous anterior lip and an attempt was made to reapply the forceps, but the head slipped back above the brim and the forceps could not be applied so as to hold. Assistance was called, and the woman finally delivered, apparently with the use of forceps. The baby was asphyxiated and was resuscitated with moderate difficulty. A day or two later a deformity of the right clavicle from fracture was made out, which soon united.

On examination at the time of the first visit to the hospital it was found that both arms were paralyzed. The deltoids were held contracted so that the arms were abducted from the body nearly to right angles. There was wrist drop on the left with apparently some shortening of the flexors of the wrist. On the right the biceps could be contracted so that the arm was held flexed at the elbow. There was no power of flexion or extension of the wrist, and apparently little or none in the fingers on this side. A few days later the child was examined more in detail, and it was found that in the right arm there was good strength in the deltoid and in the biceps. The hand on this side could be extended but then deviated to the ulnar side, and there was no extension of the fingers. There was slight power of flexion of the fingers. The power of voluntary motion of the triceps and most of the muscles of the forearm was lost. To the faradic current a response was obtained in the deltoid, biceps, supinator longus, extensor carpi ulnaris and the extensor digitorum but in no other muscles. To galvanism the contraction was quick in the deltoid, biceps, and supinator longus, while judging from the slow contraction without testing the polar reactions, there was a reaction of degeneration in the triceps, and a slight or doubtful contraction in the pectoralis major, the flexors of the hand and of the fingers, and the small muscles of the hand. In the left arm the arm could be abducted well and the forearm flexed. There was also some power of flexion of the wrist, when the hand deviated towards the ulnar side, and also some flexion of the fingers. There was no power of extension of the wrist. The deltoid on this side reacted well to the faradic current, and the biceps and flexor carpi ulnaris and radialis slightly, but no other muscles responded. To the galvanic current there was a normal response in the deltoid, biceps supinator longus, and the extensors and flexors of the hand and fingers, while the triceps showed the slowed contraction of a degenerative reaction, and the response in the small muscles of the hand was doubtful. The examination of the spine showed nothing abnormal, and the lower extremities showed no paresis, or spacticity or increase of the reflexes.

Jolly has reported a case that in distribution of the paralysis and also in the details of the labor is almost an exact counterpart of the two just given. The child was the first one and the presentation a face, which was manually converted into an occiput presentation and so delivered. There was no manipulation of the arms. Immediately after birth there was noticed a peculiar position of the arms with paralysis of the forearms and hands. Jolly examined the child when eighteen days old and found both arms raised somewhat above the horizontal and strongly abducted, with the forearms flexed and pronated, while the fingers and hands hung flaccid. The head was drawn slightly backward, but could be drawn forward without any resistance being perceived, and the upper arms could be freely moved passively and the forearms extended. Upon being released the arms immediately returned to their former position. There was no active drawing down of the arms, extension of the forearms, or movements of the hands or fingers observed. The legs were moved freely in all directions, and there was no muscular spasm in them. No abnormalities of joints or bones of arms or spine or head were found. The palpebral fissure and pupils were of normal size and not different on the two sides. No disturbance of sensation for pin or the faradic current could be made out in arms or legs. During sleep the arms hung down

completely relaxed. The faradic irritability was present in all the muscles of the arms though somewhat diminished in the pectoralis major, and the latissimus dorsi. With the galvanic current there was a slowed contraction [RD] in the latissimus dorsi, pectoralis major, triceps, the extensors of the hand and fingers, and the interossei, while the deltoid, biceps, supinator longus and the flexor muscles in the forearm showed a quick contraction. The child developed normally mentally and bodily except for slight rickets, and at eighteen months there was some movements of the hands and fingers. It moved the legs normally, there was no atrophy or spastic condition in them, and the knee jerks and electrical reactions were normal. The head was held normally and moved freely in all directions. The child held the arms as before, at an angle of 45° with the body, raised and abducted, and flexed at the elbows, and the hands extended at the wrists. The fingers on the right were extended, and on the left flexed. The arms could be elevated to an angle of 45° with the head, moving the scapulæ, but could not be elevated to the vertical. There was no adduction of the arms, nor extension of the forearms. Extension of the right hand was performed by the extensor carpi radialis and the extensor pollicis, while extension of the fingers was doubtful. Flexion of the proximal phalanges was observed, and slight flexion of the other phalanges. The child could hold a coin, but not with much strength. On the left side there was extension of the hand, but no movement of the fingers. To the faradic current the triceps, pectoralis major, and latissimus dorsi of both sides showed no reaction, and that of the interrossei was doubtful. The flexors of the right hand and fingers, the opponens pollicis, and the extensors of the fingers, and on the left the extensors of the hand and fingers showed diminished irritability, while a good reaction was obtained in the deltoids, biceps, and supinator longus of both sides, and in the flexors of the hand and fingers and opponens pollicis on the left, and the extensor carpi radialis on the right. To galvanism there was a quick contraction on both sides in the deltoid, biceps, extensors carpi radialis and ulnaris, and on the left in the flexor carpi and the flexor of the fingers. In the flexor of the fingers on the right there was a slowed contraction while the extensor digitorum and the interossei could not be tested. In the triceps there was a very slight slow contraction, and no reaction in the pectoralis major and latissimus dorsi.

Jolly concludes that there was an injury of the seventh and eighth cervical nerve roots, chiefly of the seventh, as the muscles supplied by the eighth and the first thoracic root recovered to some extent, and from the first there was no involvement of the sympathetic fibers contained in the first thoracic root, and thinks the injury was due to the excessive lordosis from the face presentation, which led to stretching of the nerve roots at their point of exit from the spinal canal.

This case of Jolly and the two reported in this paper, so far as I can learn, are unique among birth paralyses, in that they are the only ones of which I have heard, or which I have been able to find in the literature in which a bilateral paralysis was present affecting the lower arm group of muscles where the delivery was not a breech or footling.

The peculiar distribution prevents the assumption that these cases were due to injuries of the nerve trunks in the extremities, as the nerves involved, the musculo-spiral, median and ulnar, are numerous and some of the muscles supplied by them were unaffected. The wasting of the paralyzed muscles and the reaction of degeneration would prevent the consideration of cerebral birth injuries, aside from the distribution of the paralysis. The remaining possibilities are those of a pre-natal, anterior poliomyelitis, or an injury occurring during birth. The former, though perhaps possible, is extremely improbable, and the only remaining possibilities are either a hematomyelia of the cervical cord, or an injury of the brachial plexus. The circumstances of the delivery of the first of the cases here reported, in which the physician noticed a click so loud that after the birth of the child he examined for a fracture of the spine, would seem to make a hematomyelia more probable. However, I think we shall be forced to reject this explanation from the fact that in neither of my cases nor in that of Jolly was there the least evidence of any injury of the spine or of any involvement however slight of the pyramidal tract fibers for the legs. In the first of my cases the child learned to walk rather younger than the average, and there is not the slightest sign of any spastic paralysis in the gait, nor in either case is there any spastic condition on examination or change in the reflexes. It is most improbable that a hematomyelia should have so sharply confined itself to the ventral horns, when it was bilateral and involved a considerable portion vertically of the cervical enlargement, and that in not one of three cases should it have encroached upon the pyramidal tracts, even enough to have produced temporary symptoms.

A case reported by Raymond is interesting in this connection. A boy, six years old, was seen by him, who had been paralyzed from birth. The labor was severe and long, and the child, a footling, was asphyxiated. Both arms were affected and had not grown properly. In the right arm, which was the more affected, there was slight power in the deltoid, the arm was atrophied, and hung limp with the forearm pronated, and the hand towards the ulnar side. Both arms could be raised at the shoulder to an angle of 45°, flexion of the forearms was lacking, and most movements of the hand were lost. The electrical reactions were diminished for both currents. In the legs there was marked muscular spasm, but no paralysis, the gait was spastic, and the reflexes were increased, but there was no ankle clonus, and no disturbance of the bladder or rectum. The trunk, head and neck were normal, and there were no pupillary changes. Raymond excludes multiple neuritis, traumatic birth paralyses, Little's disease, double hemiplegia, anterior poliomyelitis, amyotrophic lateral sclerosis and syringomyelia, and concludes the trouble was due to a hematomyelia. A similar case with bilateral paralysis of the arms with atrophy of the muscles, and a spastic condition of the legs is reported by Gravellona.

The fact that the muscles affected in the cases are represented in the seventh and eighth cervical and first thoracic nerve roots would be against an injury of the nerve roots at the point of exit from the spinal canal from dislocation of the vertebræ, as well as the absence of any symptoms of injury of the spine immediately after birth, shown by

the freedom of movement of the head and confirmed by the normal sciagraph in the first case.

It seems to me that the lesion in these cases must be one of the brachial plexus, and chiefly of the seventh cervical root, though the eighth and the first thoracic root are also involved, though none of the cases show the pupillary changes or the narrowing of the palpebral fissure seen in involvement of the sympathetic fibers found in the first thoracic root. The escape of the sympathetic fibers may have been because the injury of this nerve root was only partial, as shown by the retention of some movement in some of the small muscles of the hand, though in the first of my cases the atrophy of the small muscles of the hand was very marked and the improvement of the use of the hand seemed to depend entirely upon the increase of power in the long flexors of the fingers, but a more probable explanation is that the sympathetic fibers escaped injury because the point of injury of the nerve root was further from the spinal canal than that at which the sympathetic fibers leave the nerve root. The escape of the serratus, latissimus and pectoralis from paralysis would seem to show, if we follow Kocher's table, that the sixth cervical root was unaffected, but in that case we must follow Starr in placing the fibers for the triceps chiefly in the seventh root, rather than in the sixth as Kocher does, as this muscle was one of those most severely affected in all three cases.

In case then we have an injury of the lower portion of the brachial plexus in these cases the question at once arises of the explanation of the mechanism of this injury. There has been much discussion and considerable difference of opinion in regard to the cause of obstetrical paralysis in general. Spoken of by Smellie in 1746 and more fully described by Danyau in 1851, general attention was first called to this condition in 1872 by Duchenne. Erb in 1874 first called attention to the combination of muscles affected being represented in the brachial plexus at the junction of the fifth and sixth roots. Burr took the ground that in many of these cases the lesion lies in the cord, a view now generally rejected. That the cord may be injured in cases of breech presentation is proved by the case of Raymond already quoted, and by a case of Parrot where in a primipara a midwife extracted a footling with such force that there was found a rupture of the cord together with the meninges between the sixth and seventh cervical vertebræ. In a discussion at the Wiener Medicinischer Club on Nov. 22, 1899, Neurath took the ground that cases of obstetrical paralysis were often cord lesions, and spoke of two cases in which there was flaccid paralysis of both lower extremities after version, with partial recovery. In one of these cases there was an autopsy and multiple miliary hemorrhages were found in the cord, most numerous in the lumbar region.

Autopsies in cases of obstetrical paralysis, however, are not numerous. Roulland reports one case of double upper-arm type in which the examination of the nerve tissues was negative. Danyau found blood in the tissues about the plexus. Eversmann reports a breech case where there was difficulty in delivering the left arm, which was afterwards paralyzed. The child died at the age of two and a half months of a spasm of the larynx, and at the autopsy there was found great cicatricial thickening of the plexus where the fifth root joins the sixth. Microscopically the nerve fibers could not be traced through the mass, which was formed of connective tissue. Nonne and Oppenheim also found injuries of this part of the plexus. Thorburn quotes Kennedy who at operation, in three cases, respectively two months, fourteen years, and six months after birth, found in each instance a cicatrix of this same point in the plexus. Philippe and Cestan report a case of a footling where violent traction was made during delivery, and the child had a double arm paralysis of the arms, and a spastic condition of the legs without disturbance of the sphincters, and there was found at the autopsy ruptures of the upper part of the brachial plexus, and a slight pachymeningitis of the lower cervical region with some tearing of dorsal nerve roots and consequent degeneration in the dorsal columns, and a cerebral meningitis with consequent degeneration of the pyramidal tracts.

Küstner advances a theory that has been rejected at once by all other writers who have had any extensive experience with these cases, namely, that the trouble is usually due to fracture of bones or separation of epiphyses of the arm. Various explanations of the mode of injury of the plexus have been offered, the most general ones being:

1. Compression between the clavicle and the first rib. [Badinger, Kron, Gaupp, Nelleton, Vincent and Walton.]

2. Compression between the clavicle and the transverse processes of the vertebræ [Bernhardt, Oppenheim, Roulland, Schultze and Shoemaker] as an occasional cause; and

3. Stretching of the plexus. [Walton, Fieux, Stone, Duval and Guillain, Shoemaker, Landot and Stolper.]

Shoemaker, Fieux, Stone, Duval and Guillain, and Stolper all confirmed the possibility of stretching the upper part of the plexus by experiment, while Fieux, Stone and Shoemaker produced rupture of the fifth root, or of the fifth and sixth roots by this means.

The older theory of pressure upon the plexus by pressure from forceps or of the fingers must be given up, as a number of experimenters have shown that it is impossible to apply the forceps while traction is being exerted so as to produce any pressure upon this point of the plexus. Stolper, for instance, says that pressure upon this part of the plexus can only be produced when the head is extended, and that, in experiments with the phantom, as soon as traction is made the forceps slip up. Duval and Guillain, and Shoemaker also consider it impossible to produce pressure upon the plexus in this way. In addition a considerable number of cases occur in which this form of paralysis is seen, in which forceps have

not been applied at all, or, as in the case recently reported by Rühle, where the forceps were applied only for a short time, without the use of much force. In these cases difficulty in delivery of the shoulders will almost invariably be noted.

A number of cases of double paralysis of the upper-arm type have been reported, as by Ducourneau, Naudaud, Roulland, Oppenheim, Köster, Philippe and Cestan, and Carter. In three of these cases the position of the child at birth was not stated, in that of Roulland it was an occipital one with the cord about the neck, and in three delivery was by breech or as a footling.

Shoemaker collects 95 cases of obstetrical paralysis from the literature where the position at birth was given. Of these 55 were cases of head presentation, and of these, 10 times the birth was normal, in 8 the head was drawn to one side, in 10 there was a pull in the axilla, and in 28 forceps were used. Forty cases were of breech presentation, and in 6 the birth was spontaneous, in 34 cases the child was extracted, and in these cases 13 times one or both arms went up.

Stransky collected 94 cases, of which 3 were cases of total paralysis, and 12 were pure lower-arm type of plexus paralysis, in some of which pupillary symptoms were present.

I have been able to collect 16 cases from the literature in which the paralysis was of the lower-arm type. Eight of Guillemot's, three of Seeligmuller's, and one each of Thorburn, Raymond, Comby, Dauchez and Jolly. Of these in four cases one arm only was affected, and in twelve both arms. Of the cases where one arm was affected the position was not noted in one instance, in one it was a head presentation, and in two a breech. Of the bilateral cases, all were breech presentations except the one of Jolly.

In many of the breech cases the arm was extended above the head, a position which is agreed by many writers upon birth paralysis and on lower-arm type of plexus injuries from other causes, is likely to produce an injury of the lower part of the plexus, probably from stretching, the plexus being made tense by the head of the humerus. Carter even goes so far as to say that over extension of the arm always causes a paralysis of the lower-arm type. A case reported by Sehrwald is of interest here. A young recruit, quite heavy but with poorly developed muscles, in attempting to draw himself up on the horizontal bar, found it impossible, and hung for some minutes with the head hanging far back and then dropped to the ground, and was found to have a paralysis of both serratus muscles, which Sehrwald explains by pressure upon the plexus of the clavicle against the first rib, when the scaleni were made tense by putting the head back, thus preventing the plexus from slipping back towards the vertebral column where pressure could not injure it.

In the cases of bilateral lower-arm type of plexus paralysis under consideration something the same mechanism seems best to explain the production of the injury. In these cases where the presentation was a head and not a breech an extension of the arms above the head was manifestly impossible, and we know from the history of the birth in all three cases that this did not occur. One fact, however, is prominent in all three cases, and that is that in each instance the presentation was a face or a chin. That is, that in these cases the head was strongly extended, the same mechanism thus coming into play as in the case of the recruit on the horizontal bar to make the plexus and scaleni tense. Then, either from stretching, or, less likely, from pressure of the clavicle against the first rib, the lower part of the plexus was injured, but far enough away from the spinal column so that the ocular branch in the first thoracic root to the sympathetic escaped, and in this way this peculiar form of paralysis was produced. Jolly, in discussing the etiology of his case, thinks that it was stretching of the nerve roots at their point of exit from the spinal canal, produced by the excessive lordosis from the face position. An injury of the nerve roots, however, should have produced the ocular symptoms of an injury to the fibers of the sympathetic in the first thoracic root. With three cases to study in place of the single case of Jolly I can only confirm the opinion advanced by him nearly a decade ago as to the mechanism of the production of the injury to the plexus in these cases by stretching of the plexus from the over extension of the head in cases of face presentation.

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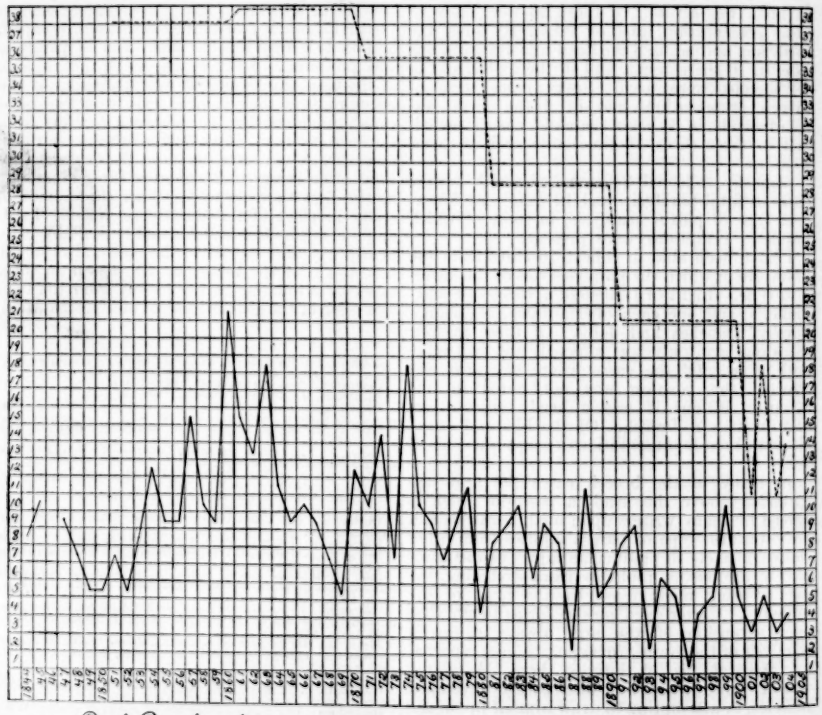
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CONSUMPTION IN A MASSACHUSETTS TOWN.

BY ELLIOTT P. JOSLIN, M.D.,

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THE records of the town of Oxford, Mass., from 1844 to 1904 inclusive, show that 512 out of 2,849 deaths were due to consumption.[1] This makes Oxford's average rate of mortality from consumption greater than that for the whole State of Massachusetts during the last half century. The town, however, is well situated in the center of the state and presents the usual features of New England villages. The population has varied between 2,380 and 3,034 in numbers dur-



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ing this period, and has been occupied in farming or in work in shoe factories and woolen mills. About one third of the people live on the "plain" along the broad main street, each house having as a rule a large yard, while the remainder are

[1] There are no statistics for the year 1846 because of the death of town clerk and sexton.
No note was taken of other forms of tuberculosis.

scattered over the surrounding hills on farms, or are gathered in five or six small factory villages. When one considers that consumption has been responsible for more than one death in six in such a community, the desirability for the study of the cause becomes obvious. Particularly is this so because with the present knowledge of the disease such a locality offers a most favorable field for preventive medicine as well as for treatment. The prominence which has been given to the tuberculosis question in cities has diverted attention from the prevalence of the disease in the country. Yet it is here where it can be most profitably attacked.

The usual causes of error were met with while compiling the statistics. Cases were not reported as consumption though they were known to be such. As an illustration of this source of error, one individual was said to have died of heart trouble, although a few months before death the sputum contained tubercle bacilli, and there were signs on both sides of the chest. To counterbalance these cases are those with chronic cough who die at seventy years of age or more and are reported as consumption. To-day it is beginning to be recognized that such cases may not be due to tuberculosis, and the profession as a rule awaits the results of the examination of the sputum before making a diagnosis. Undoubtedly many of these patients had the disease, as a study of their families and homes would imply, but it is improbable that this was the cause of all such deaths. Another error arises from the migratory nature of the mill population. In many instances persons having developed the disease left the town, while others with the disease came in to take their places.

The greatest number of deaths occurred in 1860, when 21 were recorded. My personal study of the records made me consider the number far more likely to have been 27. It is a conservative statement to say that the total number of consumptives that year in the town was 100, and that 200 more persons were constantly exposed to the disease. Thus every thirtieth neighbor one met had tuberculosis, and at least every tenth had it or was caring for some one with it! Consider the sanitary aspect of a town meeting at that period! All male consumptives, unless in the very last stages, would certainly be present on account of the diversion it afforded. Imagine the danger of infection from three saloons which at one time were kept by consumptives! Decency made the churches less dangerous, but the prevalence of the disease among the worshippers undoubtedly contributed to the melancholy type of their religion.

It is a striking fact that the death-rate for tuberculosis in this favorably situated country town has exceeded that of the State of Massachusetts for thirty-one of the last fifty-four years, and that the average mortality for the whole period has been greater in the town than in the state. This is certainly contrary to what would be expected and contrary to the general rule. The statistics for France [2] show that the mortality for consumption decreases with the diminution of the size of the cities and towns. Thus cities with 50,000 population or more had a mortality of 41.3 per 10,000; cities with 10,000 to 50,000 population a mortality of 30.1; cities with 5,000 to 10,000 population a mortality of 26.7, and those under 5,000 population, 24.5 per 10,000. The following table shows the mortality for Massachusetts and Oxford:

TABLE I.

Deaths and Death-rates from Consumption in Massachusetts and in Oxford, 1851–1904.

Massachusetts			Oxford.		
Periods.	Deaths.	Death-rates per 10,000.	Periods.	Deaths.	Death-rates per 10,000.
1851–60	45,252	39.9	1851–60	105	38.3
1861–70	45,913	34.9	1861–70	109	38.8
1871–80	54,039	32.7	1871–80	99	36.1
1881–90	58,303	29.2	1881–90	74	28.9
1891–1900	54,374	21.4	1891–1900	55	21.4
1901	5,033	17.5	1901	3	11.2
1902	4,685	15.9	1902	5	18.6
1903	4,531	15.1	1903	3	11.2
1904			1904	4	14.9

1851–1900, average death-rate per 10,000: Massachusetts, 29.6; Oxford, 32.7.

Deaths and Death-rates from Consumption in Oxford, 1851–1900.

In five-year periods.

Periods.	Deaths.	Death-rates per 10,000.
1851–55	41	31.6
1856–60	64	43.7
1861–65	87	60.5
1866–70	43	31.2
1871–75	59	42.0
1876–80	40	28.7
1881–85	42	33.8
1886–90	32	25.7
1891–95	30	23.9
1896–1900	25	19.7

The average mortality for consumption reckoned for periods of five years between 1851 and 1900 shows considerable variation, but this is hardly more than can be expected with statistics on so small a scale. The years 1861–65, however, stand out from the rest, for the mortality then rose to 60.5 per 10,000 living. This was undoubtedly a result of the Civil War, because the statistics for the whole state show a similar, though not such a great, increase at this time.

The important part which consumption has played in the mortality of the town is again manifest when it is realized that it has caused one out of every five or six deaths for sixty years.

In 1854, 37.5%, or one in every three deaths, was due to this cause. In 1896 there was but one death from consumption in the town in a total of thirty-four deaths. This gratifying diminution in the death-rate from consumption will be considered in another place.

NATIONALITY.

The town has undergone the changes in the character of its population common to most New England villages. The foreigners at first were mostly Irish, but in the last thirty years have been French Canadians. The influx has always been gradual, and there has probably been no

[2] Blumenthal: Bekampfung der Tuberkulose als Volkskrankheit, p. 2, Berlin, 1905.

period when even a fifth of the population has been of foreign birth. The deaths among foreigners it will be seen have not been out of proportion to the native born. The nationality of the individuals who died from consumption was as follows:

TABLE II.

American	393
Irish	43
French Canadian	34
French	1
New Brunswick	3
English	7
German	3
Scotch	2
Indian	1
Colored	13
Not given	12
	512

OCCUPATION.

No single occupation seems to have been especially predisposed or immune to the disease. Though there have been many mills and shoe factories in the town, these have been, as a rule, small. In recent years the same process of consolidation has gone on here as elsewhere, and in one mill there are now two hundred and fifty employees. The following table makes it evident, however, that factory work in this town has not notably predisposed to consumption:

TABLE III.

OCCUPATION OF CONSUMPTIVES IN OXFORD, 1844–1904.

Housework	156
Shoemakers	40
Farmers	30
Mill Operatives	26
Laborers	25
Mechanics	13
Storekeepers	7
Teachers	5
Servants	4
Carpenters	3
Saloon keepers, masons, barbers, bakers, R. R. station men, bookkeepers, each 2	12
Various occupations, 1 each	18
Under age of 10	45
Over age of 10, occupation unknown	128
	512

AGE AND SEX.

TABLE IV.

	Male.	Female.
Less than 1 year	15	10
1–10 years	8	11
11–20 "	26	37
21–30 "	56	71
31–40 "	31	46
41–50 "	38	32
51–60 "	30	16
61–70 "	23	23
71–80 "	11	14
81–90 "	3	4
93 "		1
Total	243	265

The number of individuals who died above seventy years of age with consumption was 33, or 6% of the whole number. The details of the family and home life of these individuals were investigated because of the occurrence of the disease so late in life. Of these 33 cases, 7 had relatives die of the disease, and 10 others lived in houses in which there had been other deaths from consumption. The dwellings were not determined in 3 instances. Therefore, 17 of the 30 cases traced had either relatives or housemates from whom to become infected. Thus a child and his mother died of consumption in 1848, and in the following year the grandmother, at the age of seventy, succumbed to the same disease. Another instance in point is the following: Mr. S. lost a son six years of age from consumption, in 1864; in 1873, two of his daughters died of the same disease, and another daughter succumbed the following year; in 1879 two more sons similarly died, and at length, eleven years later, the father, who had buried six of his children of consumption, became a victim at the age of eighty to his family's disease.

It is not probable that in cities 6% of the total death-rate from consumption would fall above seventy years. This may be explained in Oxford by the country surroundings, which tended to prolong life as well as the course of the disease.

More than one half (54%) of the deaths occurred between the ages of twenty and fifty — the best working years of life, and the very years which mean the greatest financial loss to the whole community. The greatest number of deaths by far for both males and females occurred in the third decade.

In the second, third and fourth decades, the deaths of females exceed those of males by 38%, but in the fifth and sixth decades the deaths are 41% greater among the males. This may be explained by the fact that the men lead a more healthy and out-of-door life than the women, and so are less exposed to the disease, and having contracted it live longer.

The deaths from tuberculosis in children are most imperfectly represented by the 44 of the foregoing table. Tubercular meningitis and peritonitis, as well as osseous and glandular tuberculosis are very common in children, yet have no place in these statistics. On the other hand, deaths in children are occasionally attributed to consumption when it does not exist. Of the 44 children who died with consumption during the first ten years of life, the residence was traced in 31 instances. In 24 of these 31 cases it was found that other deaths from consumption had occurred in the same dwelling. There were 4 other deaths in the same house in 2 instances, 3 other deaths in 4 instances, 2 other deaths in 11 instances, and 1 other death in 7 instances. Thus contact evidently played a prominent part in the spread of the infection. In 2 of the 7 instances remaining in which house infection was not shown, it was found that relations in the town had died with the disease. These facts certainly tend to confirm the accuracy of the diagnosis of consumption in the children.

Sixteen of the 44 children had relatives who died with consumption in the town. Contrast this statement with the fact already mentioned that 24 of 31 children lived in houses with other cases of consumption. Only one half the number

of these 24 consumptive children had consumptive relatives who died five years before or later, while only 3 had relatives die at more remote intervals. In other words, these 24 children apparently contracted the disease just as much from non-relatives as relatives.

HOUSE INFECTION.

Since the discovery of the cause of tuberculosis by Koch in 1882, it has become more and more manifest that the disease is transmitted by the germs in the sputum, irrespective of the heredity of the individual. Environment is more important than relationship. Daily contact with a careless consumptive leads to the spread of the disease. The danger from house infection, however, is frequently exaggerated, and is but temporary. It disappears, according to Fränkel, at the end of six to ten months, while the recent researches of Kirstein [3] go to show that the virulence of tubercle bacilli in floating dust is not retained for more than two weeks. Hence it is illogical to speak of a house as being saturated for years with consumption. House infection can be shown in many ways, but perhaps best by studying the deaths in children between the ages of one and ten. By reference to the preceding paragraph it will be seen that house infection was shown in three fourths of the cases, but the influence of heredity and relationship in less than half.

The result of living in the same house with a consumptive is also shown when one considers the total number of deaths from consumption which have occurred in the various houses in the town. The homes of 371 of 506 individuals who have died of the disease since 1844 were located. These 371 persons lived in 211 houses. As there are about 600 houses in the town, it is evident that three fourths of all the consumptive deaths occurred in about one third of the houses, and it is also true that one half of all deaths from consumption occurred in one fifth of the houses. In each of these tuberculous houses there were on an average 1.8 deaths, *i. e.*, by the theory of chances, if one death occurred from consumption in a house in Oxford, another was pretty sure to follow. In each of four houses there were five deaths, which was the greatest number which occurred in any one house.

The following table will show the number of houses in the town in which 1, 2, 3, 4 or 5 deaths from consumption occurred:

TABLE V.

371 Deaths from Consumption in 211 Houses.

No. of deaths in each house.	No. of houses.	Total deaths.	Per cent of all houses.	Per cent of all deaths from consumption.
1	118	118	19.66	23.13
2	49	98	8.16	19.21
3	25	75	4.16	14.7
4	15	60	2.5	11.76
5	4	20	.66	3.92

[3] Kirstein: Zeit f. Hygiene u. Infect. Krank. Bd. l. Hft., 2, p. 213, 1905.

Thirty-four of these 211 houses might be classed as tenement houses, but even these were never occupied by more than four or five families. In these 34 so-called tenement houses there were 68 deaths. This is but slightly above the average for the whole number of 211 dwellings.

During the last ten years there have been 52 deaths from consumption. The residences of 46 of these cases were traced, and it was found that 32 of the deaths occurred in 23 houses, while the remaining 14 cases were the only consumptive deaths which occurred in their respective houses. If, however, we include the total number of consumptive deaths which had occurred since 1844 in these 23 houses in question, the total number of deaths rises from 32 to 70.

INFECTION FROM CONTACT WITH RELATIVES.[4]

It has been made evident by a study of house infection that if one death from consumption occurred in a house, this would be followed by another death in the same house in 4 cases out of 5. The statistics for consumption in families are quite different; thus the 512 cases between 1844 and 1904 inclusive occurred in 403 families. One death from consumption in a family, therefore, has been followed by another death in the same family in but 1 case out of 4 — 1.27 cases per family. Scientifically, such an outcome was to be expected, because relatives do not always live together, and frequently are not brought into close contact. It is a result, however, which is contrary to the general impression of the townspeople. Certain it is that some families were sorely afflicted. This will be seen by the following table:

TABLE VI.

No of deaths per family.	Families.	Deaths.	Per cent of all deaths from consumption.
1	341	341	66.4
2	39	78	15.2
3	12	36	7.01
4	3	12	2.33
5	6	30	5.84
7	1	7	1.36
9	1	9	1.75

The greater importance of house infection than family infection is shown also by a study of the last ten years. There were 52 deaths, and the residences were traced in 46 instances. Of these 46 cases, only 14 lived in houses in which a consumptive had not previously died. On the other hand, 33 of the whole number of 52 deaths were in families in which there had been no death from consumption in the town since 1844.

It is interesting to study the course of the disease in some families. The best for the purpose is a family of five in which a young man of eighteen died of the disease in 1899. He lived in a house in which there had been two deaths from consumption in 1882, one in 1885 and another in 1886. This young man's aunt on his mother's side died of consumption the same

[4] By relatives are understood grandparents, parents and children, brothers and sisters, uncles and aunts and first cousins.

year, 1899. The following year his mother succumbed, to be followed in 1902 by his cousin, and in 1903 by another cousin, the infant son of another of his mother's sisters. The same year his father died, but in another town to which he had moved from Oxford. The four relatives of the first case lived in the same house. Besides the father, it was thought that others in the same family had the disease when they moved away, but this I was unable to verify. It is a matter of interest to know that the consumptive father, who saw five of his relations die of consumption, was in the habit himself of spitting on the wall of his own bedroom.

In another instance a family lost five in four years. This last series was appalling. The mother and three daughters died in the same house within three years of each other, and the father then moved away to fall a victim to the disease a year later.

A young man of twenty-one died in 1879 on a farm. Seven years later his sister died in the same house. Their mother died after another interval of eight years also in the same house, and a year later another of her sons. Three years later still another brother similarly succumbed, but in a different dwelling.

One family lost nine members from consumption. The first death occurred in 1847 and the last in 1890. Several others in this family had the disease, but moved out of town. It is shocking to realize the loss caused by one disease in this family group. Consider the effect on the temperament of the survivors, as well as the financial loss. Constant illness prevented accumulation of capital, even though the family was frugal.

Another family lost seven members in twenty-six years. A mother died in 1847, the father in 1856, to be followed by one daughter who lived in the same house, and in 1863 by another daughter who had moved, and in 1869 by another daughter who had also moved. These five deaths occurring in three houses took place within twenty-two years. This family was in far better circumstances than those in which the deaths came close together.

Contrast the rapidity of deaths in these last three families with that of the two preceding. In one series we have "tenement-house consumption," with 5 deaths in four years; in the latter, "farmhouse consumption," with 5 deaths in nineteen years, 9 deaths in forty-three years, and 5 deaths in twenty-two years. Other family histories might be cited but they do not differ essentially.

During the last ten years 52 deaths from consumption in the town have occurred in 43 families. In each of 38 families there was 1 death, in one family there were 5 deaths, in another 3, and in 3 families 2 deaths each. In 10 of these families the total number of deaths from consumption since 1844 was 32. When one realizes the increased knowledge which is now possessed concerning the disease, it seems incredible that such a state of affairs should be allowed to exist.

POVERTY.

No one can go far in the study of the tuberculosis question before the influence of poverty forces itself to the front. In Marburg, Germany, four fifths of the cases of tuberculosis occurred among the poorest one fifth of the population. It is difficult to determine the financial status of the victims of the disease in Oxford, but a study of the tax rolls shows that of 114 consumptives who have died within the last twenty years, the total amount of taxes levied upon them by the town during the year preceding or the year of death amounted to $317.85. It is still more difficult to estimate the amount expended by the town in the care of consumptives, though it is not uncommon to learn that it paid the funeral expenses.

The financial loss to the town by the premature death of some five hundred persons during sixty years is problematical. If one allows that the average length of life was lessened ten years, and that a human life is worth $200 a year to the community, the actual financial loss would be for these sixty years something like $1,000,000.

Poverty plays such an important rôle in the disease that I doubt, with the present more enlightened state of public opinion, if it will often happen that tuberculosis causes the death of a taxpayer.

DECREASE OF CONSUMPTION IN OXFORD.

Consumption is steadily decreasing in Oxford. Forty years ago about every thirtieth person met on the street had the disease. To-day it is difficult to learn of a single case. In the half century closed, the mortality has declined from 38 to 21 per 10,000 living, or nearly one half. The rate of decrease is steadily increasing, and the statement is probably a conservative one that the death-rate for consumption in Oxford will diminish as much in the present decade as it did in the previous fifty years. It would not appear strange to the writer if the disease became extinct in the town within fifteen years, except for cases brought in from other localities.

The causes for the decrease are easily found. The first notable change in the mortality was in the decade 1881–1890, the decade during which Koch announced the discovery of the tubercle bacillus. People then learned definitely how to attack the disease and to prevent its spread. The sputum was recognized as the source of contagion, and efforts were made to destroy it.

Out-of-door living is another factor in the decrease. It is no longer the fashion to have the blinds closed and the curtains drawn. It is fashionable now to be sunburned, but not to be pale. Beginning in the schools the children are taught the beauty of out-of-door life. Nature study is encouraged. The results of the desire for fresh air and sunlight are shown by the increase in the number of piazzas in the town. During the last twenty years these have become half again as common.

The standard of living is raised. The houses

are better, the food is better, and the clothing for inclement weather is more suitable. More care is taken of the general health. Colds are not so much neglected. The disease is diagnosed at a far earlier stage, and hence recovery more frequently occurs.

PREVENTION OF CONSUMPTION IN COUNTRY TOWNS.

All cases of consumption should be reported to the Board of Health as soon as the diagnosis is made.

All persons who live in houses in which a consumptive has lived within one year should see to it that the house is thoroughly aired, cleaned and disinfected. They should take great pains to keep up their general health, remembering that they are very likely already infected, but in so mild a form that it is not apparent.

Since consumption is transmitted by the sputum, the greatest care should be taken to destroy it. Its destruction should be a comparatively simple matter in a town the size of Oxford, because there are so few cases that each can receive individual attention. There are probably now not far from ten to twenty persons in the town who have tubercle bacilli in their sputum. If these ten to twenty persons can be discovered, not only their lives may be saved by the early recognition of the disease, but the danger of infection of others may be prevented. A consumptive must not be allowed to infect those about him.

In this paper we have been dealing with the dead consumptive, in the future the living consumptive deserves our closest attention.

SUGAR IN THE CEREBRO-SPINAL FLUID OF DIABETICS. A PRELIMINARY REPORT.

BY N. B. FOSTER, M.D., NEW YORK.

In a paper on tuberculous meningitis Head mentions that he has several times found that the cerebro-spinal fluid produced sugar-like reductions of metal salts. He considers this reducing action of the cerebrospinal fluid suggestive of tuberculous meningitis in differential diagnosis from other forms of meningitis. It was in testing the truth of Head's observation, in connection with other studies on the chemistry of the cerebrospinal fluid, that the results here reported were disclosed. During the early part of the meningitis epidemic of 1904 an adult male was admitted to New York Hospital with symptoms suggesting a fulminating case of cerebrospinal fever. A lumbar puncture was at once done for diagnosis; the fluid was clear, contained no micro-organisms but gave a marked reduction with Fehling's solution. The urine examination later showed 4% sugar, and on account of that the cerebrospinal fluid was subjected to a more searching chemical procedure. The fluid was found to be fermentable with yeast; yielded phenylglucosazone crystals and was dextrorotary. On account of the small amount of fluid available the only quantitative estimation of sugar made was the saccharometer reading of 2.5%. The patient remained in coma until death, the day after admission.

In view of Fürbringer's[1] statement that he found glucose in the cerebrospinal fluid of diabetics but twice and these two cases were phthisical, it was considered worth while to test other cases. Twelve patients suffering of diabetes mellitus have thus far been examined, and in all the cerebrospinal fluid has been found to contain a measurable amount of sugar. The amount ranges in these cases from ½ to 3% and seems to bear no relation to the amount of sugar present in the urine. Whether any inference is to be drawn from the amount of sugar present I am as yet unable to say, but in the two cases where the percentage of sugar in the cerebrospinal fluid was highest of any in this series, the urinary glucose being only moderate, coma and death followed the lumbar puncture within a week. The presence of acetone and diacetic acid in the cerebrospinal fluid will be considered in a later paper on this subject.

While the presence of a reducing substance in the cerebrospinal fluid which is fermentable with yeast makes it more than probable that we are dealing with glucose, yet on account of some obscurity that has hung about certain chemical constituents of the cerebrospinal fluid, the tests made were as exhaustive as possible. There is a reducing substance normally present which is usually held to be pyrocatechin. Various observers have reported the finding of glucose in several morbid conditions. Nawratzki found glucose in the spinal fluid of paretics. Quincke claims to have demonstrated sugar but he does not state in what conditions. Using the phenylhydrazin test Lichtheim found sugar in all cases of tumor examined and, in contrast to Head, he thinks a positive result exceptional in tuberculous meningitis. But in none of these are the chemical methods employed fully stated and the reader is left in doubt whether the presence of a reducing substance was taken as evidence of sugar or whether other tests were made.

Inasmuch as it has been demonstrated that fermentability is a function of the geometrical configuration of the molecule, the problem is simplified in eliminating those sugars that have not three or a multiple of three atoms of sugar in the molecule. The cerebrospinal fluids from all these cases fermented with yeast and in addition to the reduction, polariscopic and osazone tests, the only conclusive test left is the melting point of the phenylglucosazone crystal. On account of the small amount of fluid that is usually available and the loss sustained in purifying the crystals there is some difficulty in procuring sufficient material with which to work. It has been found better to throw down all the sugar from the specimen of spinal fluid by means of benzol chlorid;[2] then from this precipitate the sugar is easily freed and a pure glucosazone made with which a melting point is quickly determined.

[1] Verhandl. d. XV, Cong. f. Inn. Med., 1901.
[2] Baumann. Bes. d. Deutsch. Chemie Ges., 19, 3220, 1886.

A melting point of 205° determined the identity of these sugars.

While as yet no practical result nor therapeutic indication can be claimed for results here set forth, it is hoped that they may not lack if interest sufficient to excite confirmation.

ON THE DIAGNOSIS OF CANCER AND ULCER OF THE STOMACH BY THE USE OF EXPERT METHODS OF CLINICAL PROCEDURE.

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(Concluded from No. 15, p. 409.)

THIS completes the review of the special methods of clinical examination and of the findings by these methods which in my experience have proven important aids to the facts of the history and regular physical examination in the consideration of the diagnosis of cancer or ulcer of the stomach.

The statistical value of each of the various clinical findings as made up from my cases, as the finding of stasis, or blood, I have given in the course of the review.

The real value of the findings and of the methods appears, however, not no much in the statistical record in regard to individual findings, since few of them are absolutely diagnostic of, or constant in any one particular condition, as in the aid to diagnosis which they provide when the evidence of all together, that is, the combined clinical finding, is considered in connection with any particular case.

I wish to offer you such a demonstration of the practical value of the routine use of these clinical methods of the study of stomach disorder by reporting to you the records of a series of my cases of stomach disease which have come to operation or post mortem examination.

This series in providing us with the actual pathological finding in each case, offers us a set of scientific experiments in regard to the indications of the various clinical findings or combinations of findings, and to the actual capacity of clinical diagnosis of stomach disorders which can be attained by thorough investigation of the cases along the lines indicated in this review.

And I present to you these records, both as a collection of data in the subjects of cancer and ulcer of the stomach, and as a demonstration of the use and usefulness of these special methods and the thorough method of investigation as a routine practice of clinical work.

As a preface to the report I will summarize the method of clinical procedure used in the collection of the findings and the methods of reasoning employed in deducing the clinical diagnosis from these findings in the individual cases.

Each case which presented itself at the clinic was put through the following routine, barring, of course, conditions of acute hemorrhage.

The first point investigated in each case was, whether or not the case showed evidences of the existence of any of the pathological conditions for the relief or cure of which surgery lends itself as a therapeutic method, namely, one of the two diseases, cancer or ulcer of the stomach, or the condition of gastrectasis or insufficient drainage from any cause, such as would justify an absolute or probable diagnosis of any of these conditions.

If evidence of such conditions was found, and the case appeared one which necessitated or was likely to benefit from operation, this procedure was prescribed. If definite evidences of the existence of any such conditions were lacking, the case was further investigated under medical care.

The study of each case was conducted as follows:

After the record of the history of the case and of the physical examination had been made, one of two courses was adopted, depending upon the circumstances.

1. If the record of the case strongly suggested the presence of stasis, or if a tumor was present, the contents of the stomach was obtained by tube at once — regardless of the relation of the period to the previous ingestion of food. By this means it was often possible, through the finding of evidences of stasis determinable in any contents, as sarcinæ, or food remnants, clearly those of food taken on a previous day, or of positive yeast fermentation, or through the finding of blood (excluding meat), to expedite diagnosis without the delay incident upon obtaining the fasting contents, and thus to place the case immediately in the hospital wards, where an analysis of the fasting contents for purposes of confirmation or record was made at a later date.

2. If such immediate action was not indicated, or if the results of the above methods did not give positive indications of a definite *surgical* lesion, the patient was instructed to eat regular meals, excluding all meat and fish from the diet, for forty-eight hours, and then to return empty, after a twelve hours' fast. At this period the *contents of the fasting stomach* was obtained by the tube.

After expression, the stomach was inflated with air, and its size and location, and the presence of a tumor examined into.

The contents of the fasting stomach was examined in regard to the following characteristics:

1. The presence of an abnormal food residue recognizable by macroscopic examination or by study with the microscope.

2. The presence of sarcinæ in the sediment.

3. The presence of lactic acid.

4. The presence or absence of free hydrochloric acid.

5. The presence of blood (inspection, or guaiac test).

6. The sediment was also examined in regard to the number of low organisms, the presence of pus, and of fragments of cellular growths.

7. After the above examination the contents was subjected to the yeast fermentation test. (This test is necessary only where other evidences of stasis are lacking.)

After the expression and examination of the fasting contents, the patient was given an Ewald

Case. Age. Duration of Symptoms.	Number of Examinations.	Quantity of Contents in Fasting Stomach.	Food Residue in Fasting Contents (Macroscopic).	Fermentation Tests in Fasting Contents. 1. Sarcinæ. 2. Lactic Acid. 3. Yeast Ferment Test.	Blood in Contents. Fresh Blood or by Guaiac Test.	Free Hydrochloric Acid in Fasting Contents.	Free Hydrochloric Acid after Ewald Test Meal.	Points of Significance in Physical Examination and History.	Clinical Diagnosis made from Foregoing Findings.	Pathological Diagnosis made from Findings at Operation or Post Mortem Examination.
I 50 years 2 years	1 2 3	180 cc. 60 cc. 30 cc.	None 0 0	None 0 0	+ (Guaiac) 0 + (Guaiac)	0.01% 0.03% 0	0.03% 0.18% 0.09%	Extreme tenderness in left epigastrium. Emaciation.	Cancer of stomach in anterior wall.	Cancer of anterior wall. Perforation with adhesions. Ulceration of surface.
II 40 years 4 months	1 2	600 cc. 1,000 cc.	Food Food	Lactic acid Lactic acid	0 0	0 0	0 0	No signs save loss of weight and pain.	Cancer involving pylorus.	Cancer at pylorus and over ½ stomach wall.
III 46 years 1 year	1 2	50 cc. 20 cc.	None 0	None 0	+ (Guaiac) + (Guaiac)	0 0	0.003% 0.007%	No signs save loss of weight, and pain.	Cancer of stomach.	Cancer in antrum, very small. Slight ulceration on growth.
IV 66 years 3 years	1 2	1,000 cc. 600 cc.	Food Food	Sarcinæ Yeast ferment test *Ibid.*	0 0	0.11% 0.13%	0.15%	Dilatation of stomach. Question of tumor in left hypochondrium doubtful.	Cancer of pylorus (from age of patient). On former ulcer?	Cancer at pylorus.
V 30 years 2 years	1 2	100 cc. 120 cc.	Food Food	Sarcinæ Yeast ferment test *Ibid.*	+ (Guaiac) + (Fresh)	0.19% 0.14%	0.16%	Some dilatation.	Ulcer at pylorus.	Ulcer at pylorus.
VI 46 years 2 years	1	450 cc.	Food	Sarcinæ Yeast ferment test	+ (Guaiac)	0.13%	0.18%	Dilatation. Loss of weight.	Ulcer at pylorus.	Ulcer at pylorus.
VII 64 years 2 years	1	500 cc.	Food	Lactic acid	0	0	0	Tumor.	Cancer at pylorus.	Cancer at pylorus.
VIII 34 years 7 months	1 2	200 cc. 100 cc.	Food Food	Yeast ferment test *Ibid.*	+ (Fresh) *Ibid.*	0 0.004%	0.11% 0.12%	Anemia. History of hemotemesis.	Ulcer at pylorus.	Cancer at pylorus.
IX	1 2	400 cc. 1,000 cc.	Food Food	Lactic acid Yeast ferment test Lactic acid	0 0	0 0	0 0	Dilatation. Emaciation.	Cancer at pylorus.	Cancer at pylorus.
X 34 years 3 years	1 2	200 cc. 400 cc.	None 0	None 0	0 + (Guaiac)	0.28% 0.22%	0.21% 0.25%	No signs save distress.	Ulcer of stomach with hypersecretion.	Ulcer of anterior wall. Pylorus patent.
XI 78 years 3 months	1	40 cc.	None	None	0	0	0	Constant vomiting. Emaciation.	Cancer of stomach.	Cancer of wall. Schirrus.
XII 26 years 4 months	1 2	25 cc. 25 cc.	Food Food	None 0	0 0	0.11% 0.11%	0.13%	No signs save dyspepsia and loss of weight.	Ulcer of stomach.	Ulcer in antrum, old scar causing packer of membrane to obtrude before pylorus. Pylorus itself patent.

Case. Age. Duration of Symptoms.	Number of Examinations.	Quantity of Contents in Fasting Stomach.	Food Residue in Fasting Contents (Macroscopic).	Fermentation Tests in Fasting Contents. 1. Barcine. 2. Lactic Acid. 3. Yeast Ferment Test.	Blood in Contents. Fresh Blood or by Guaiac Test.	Free Hydrochloric Acid in Fasting Contents.	Free Hydrochloric Acid after Ewald Test Meal.	Points of Significance in Physical Examination and History.	Clinical Diagnosis made from Foregoing Findings.	Pathological Diagnosis made from Findings at Operation or Post Mortem Examination.
XIII 50 years 1 year	1	30 cc.	None	None	+ (Guaiac)	0	0	Emaciation. Sediment of contents consists of pure pus.	Cancer of stomach.	Cancer of lesser curvature.
XIV 40 years 1 year	1 2	180 cc. 60 cc.	Microscopic only *Ibid.*	Yeast ferment test *Ibid.*	0 0	0.03% 0.19%	0.14% 0.12%	Slight dilatation.	Gastrectasis. Probably cancer or ulcer near pylorus.	Mass of adhesions constricting pylorus.
XV 38 years 5 years	1	150 cc.	Food	Yeast ferment test	0	0.08%	0.06%	Much dilatation.	Ulcer of pylorus (old ulcer).	Large cicatrix of ulcer at pylorus.
XVI 60 years 3 months	1	50 cc.	None	None	+ (Guaiac)	0	0	No signs save loss of weight and dyspepsia.	Cancer of stomach.	Cancer of lesser curvature.
XVII 24 years 1 year	1	20 cc.	None	None	0	0.12%	0.11%	Vomiting. Neurotic type.	Neurosis. No objective evidence.	Stomach intact (opened). Operation against advice.
XVIII 30 years 4 months	1 2	12 cc. 20 cc.	None 0	None 0	+ (Guaiac) + Fresh	0 0	0 0	Tumor in left epigastrium. Emaciation.	Cancer at pylorus.	Cancer at pylorus.
XIX	1	400 cc.	Food	Yeast ferment test	0	0.04%	0.11%	Dilatation.	Ulcer at pylorus.	Ulcer at pylorus.
XX	1	75 cc.	None	None	+ Fresh	0	0	Tumors.	Cancer of stomach.	Cancer of lesser curvature and anterior wall.
XXI 55 years 3 months	1	400 cc.	Food	Lactic acid	+ Guaiac	0	0	Tumor in left epigastrium.	Cancer at pylorus.	Cancer at pylorus.
XXII 56 years 2 months	1 2	500 cc. 800 cc.	None None	None 0	0 + Fresh clots	0.21% 0.11%	0.24%	No signs save pain and vomiting.	Ulcer of stomach. Hypersecretion. No stasis.	Ulcer of anterior wall.
XXIII 66 years 1 year	1	100 cc.	Food	Lactic acid	+ Guaiac	0	0	Tumor in left epigastrium. Dilatation.	Cancer at pylorus.	Cancer at pylorus.
XXIV 38 years 2 years	1 2 3	50 cc. 10 cc. 25 cc.	None 0 0	None 0 0	None 0 0	0 0 0.07%	0.06% 0.11%	No signs save constant pain in abdomen and loss of weight.	No direct evidence of stomach trouble. Exploratory.	Stomach intact (opened), chronic appendix and large mesenteric glands.
XXV 52 years 16 months	1 2	1,000 cc. 900 cc.	Food Food	Lactic acid *Ibid.*	+ Guaiac *Ibid.*	0 0	0 0	Tumor in left epigastrium. Emaciation.	Cancer at pylorus.	Cancer at pylorus.
XXVI										

XXVI 30 years 6 years	1 2	400 cc. 100 cc.	None 0	None 0	0 + Guaiac	0.28% 0.20%	0.21%	No signs except spells of pain. History of vomiting blood five years before.	Ulcer of stomach.	Ulcer of anterior wall. Perforation and adhesions to liver.
XXVII 64 years 1 year	1	15 cc.	None	None	0	0	0.002%	Dyspepsia and anemia.	No direct evidence of stomach disease. Ventral hernia.	Operation for hernia. Stomach found intact.
XXVIII 42 years 1 year	1	30 cc.	None	None	+ Clots	0	0	Tumor above navel. Erosions in contents.	Cancer of stomach.	Cancer of anterior wall.
XXIX 27 years 18 months	1	300 cc.	Food	Sarcinæ 1 tube of gas in 36° Yeast ferment test	None None	0.07%	0.13%	Tumor felt in left epigastrium.	Ulcer at pylorus.	Ulcer at pylorus with adhesions.
XXX 64 years 18 months	1	200 cc.	Food	Lactic acid Yeast ferment test	+ Coffee grounds (Guaiac)	0	0	Tumor in left side.	Cancer at pylorus.	Cancer at pylorus.
XXXI 40 years 16 months	1	600 cc.	Food	Sarcinæ 1 tube of gas in 24° Yeast ferment test	None	0.11%	0.16%	Slight dilatation.	Ulcer at pylorus.	Ulcer at pylorus.
XXXII 50 years 2 years	1 2	30 cc. 15 cc.	0 0	None None	+ Clots + Fresh	0 0	0 0	Tumor in left side. Pus in sediment.	Cancer of stomach.	Cancer of lesser curvature and ulceration.
XXXIII 36 years 1 year	1	600 cc.	Food	1 tube of gas in 24° Yeast ferment test	+ Guaiac	0.24%	0.26%	Dilatation.	Ulcer at pylorus.	Ulcer at pylorus.
XXXIV 60 years 5 years	1	40 cc.	None	None	None	0	0.04%	Dyspepsia for years.	No direct evidence of stomach disease.	Operation against advice. Stomach intact (opened).
XXXV 24 years 1 year	1	20 cc.	None	None	None	0.19%	0.21%	History of dyspepsia and frequent vomiting.	No direct evidence of stomach disease.	Operation against advice. Stomach intact (opened).
XXXVI 34 years 6 months	1	60 cc.	None	None	+ Guaiac	0	0	Doubtful. Tumor in epigastrium.	Cancer of stomach.	Cancer of anterior wall.
XXXVII 62 years 4 months	1	800 cc.	Food	Sarcinæ	+ Guaiac	0.11%	0.07%	Tumor in left side. Emaciation.	Cancer at pylorus.	Cancer at pylorus.

test meal and the contents expressed and examined qualitatively and quantitatively for free HCl. This step is necessary only in cases where diagnosis has not already been determined by the previous examinations or where no free HCl is present in the fasting contents. Its chief use is for discrimination in regard to the presence or absence of free HCl and the estimation of the quantity, points which cannot be determined by the examination of the fasting contents. (See Cases III, XXIV.)

This method of clinical procedure should be carried out up to the point of diagnosis, or failing that in its entirety, in every case which comes to the clinic. If, at the end, stasis is excluded and the question of cancer or ulcer left not proven, further investigation in regard to the character of the disorder present, whether a hypersecretion, an atrophy of the stomach, or nervous dyspepsia, may be carried on under medical observation.

The general method of reasoning employed in arriving at a clinical diagnosis from the physical findings, particularly those discovered by the use of these special methods which we have reviewed, was the following:

1. The presence of stasis, as evidenced by food residue in the fasting contents or of sarcinæ in any contents, was taken to indicate the existence of obstruction of the pylorus from cancer or ulcer or adhesions, or other cause, or possibly the existence of simple atonic dilatation or ptosis, without actual obstruction.

2. The presence of stasis or stagnation as evidenced by the presence of lactic acid or yeast fermentation in the fasting contents, *no food residue being present*, was taken to indicate one of the above causes of stasis, obstruction of the pylorus or atony, or as an alternative, a neoplasm situated anywhere on the stomach wall.

In differentiating in regard to these various conditions which may exist as underlying causes of the sign stasis, the following findings were of value:

The absence of evidence of ptosis or of marked dilatation by the inflation test, tended to rule out atonic dilatation as the cause of stasis and to fix the diagnosis as ulcer or cancer or adhesions at the pylorus. (See cases II, XII.) The presence of ptosis or dilatation of marked degree gave these simple causes consideration as possible causes of the stasis, though, as a rule, even where marked dilatation was present, a diagnosis of ulcer or cancer as a cause was made from the combined symptom picture. (See cases XV, XIX.)

The presence of blood in addition to stasis made the indication of cancer or ulcer as the cause of the stasis, very definite. The absence of free HCl after a test meal or the presence of lactic acid in combination with stasis was strongly suggestive of cancer as the cause of the stasis, as against ulcer or other cause. (See cases V, XII contrasted with cases II, IX). The presence of free HCl with stasis, though more common with ulcer than with cancer, is so common in cancer that it was given but secondary weight in differential diagnosis. (See cases IV, and V, and XXXVII.)

If stasis was not demonstrable in the case, obstruction of the pylorus, or dilatation or ptosis of sufficient degree functionally to cause insufficient drainage was ruled out and the diagnosis was reduced to ulcer or cancer located elsewhere than in the pylorus, or some one of the affections of the stomach not necessitating surgical interference, that is, some one of the various medical affections of the organ.

In the absence of any of the above significant findings or combinations of findings the diagnosis of cancer or ulcer or other affection of the stomach demanding surgical interference was considered to be not preven, barring, of course, cases with a history of hematemesis or with a showing of stomach symptoms associated with cachexia.

In my investigation 160 cases of stomach disorder were examined by the above method. The records of those of the cases in which a pathological examination was obtained, 37 in number, are given in the following table. In this table I give in the record of each case, first, the clinical findings obtained by the use of the special methods of physical examination reviewed, as presence of food residue, blood, presence of dilatation by inflation; also any facts of the history, as age or duration of symptoms, or of the regular physical examination, as the presence of tumor or cachexia, of direct value in diagnosis, then the chemical diagnosis as deducted from these findings, and finally the anatomical or pathological examination as obtained at operation or post mortem.

A summary of these records is as follows:

Total numer of cases of stomach disorder investigated, 160.

Number in which anatomical or pathological diagnosis was obtained, 37.

In these 37 cases the corresponding records of the clinical diagnosis made previous to operation and of the anatomical or pathological diagnosis made at operation or post mortem are as follows:

Eighteen cases: Clinical diagnosis of cancer. Pathological diagnosis, cancer in all.

Twelve cases: Clinical diagnosis of ulcer. Pathological diagnosis, ulcer 11 cases, cancer 1 case.

One case: Clinical diagnosis, gastrectasis, possible cause, cancer or ulcer. Pathological diagnosis, adhesions about pylorus from gall bladder.

One case: Cause of symptoms unknown. Stomach contents normal. Pathological findings, chronic appendix; large mesenteric glands; stomach no lesion.

Three cases: Diagnosis, neurosis; no cause for operation. Pathological finding in all, no lesion of stomach.

One case of hypoacidity operated upon for ventral hernia and explored for possible cancer. Contents normal save for hypoacidity. Pathological finding, stomach intact.

That is, in 31 cases of stomach disorder in which the clinical findings pointed to the existence of cancer or ulcer of the stomach and in

which such a diagnosis was definitely made from the findings, one of the two lesions was found present in all, and the diagnosis of the type of lesion was correct in all but 1 case; in 3 cases in which no cause for operation was found by clinical findings, no cause was present on operation; in 2 cases where the clinical findings failed to show definitely evidences of an organic lesion, but which were operated upon for other reasons, no lesions of the stomach were found.

The accuracy of the indications gained by these clinical methods of examination is still more marked if we study the testimony of the records in regard to the diagnosis of the location of the diseased conditions. These records show:

Nine cases, clinical diagnosis of cancer at the pylorus. Pathological finding in these 9 cases, cancer at the pylorus in all.

Nine cases, clinical diagnosis, ulcer involving or occluding pylorus. Pathological diagnosis in these cases, ulcer at pylorus 8 cases, cancer at pylorus 1 case.

The detailed records of the cases may be seen in the accompanying table.

The conclusion which can be drawn from the work in regard to the accuracy of diagnosis of stomach disorder which can be achieved through the practice of a thorough method of clinical examination in all cases is certainly a definite one.

Although the number of observations in this series is limited the record is so emphatic that it encourages us to believe that if such a method of study is supplied as a routine in all stomach cases much more accurate results as regards diagnosis will be obtained than are at present the rule. And as a result we shall on the one hand get to operation at an earlier date than is at present the rule those causes where operation is serviceable, and on the other hand have a much less number of cases operated upon unnecessarily or upon insufficient evidence than is now the case.

I have in this report omitted the histories and symptoms of the cases, for the reason that the investigation was designed to determine not the full roster of the signs and symptoms of cancer and ulcer, but simply the value of the findings of the special or expert methods of stomach investigation, not as in the case of the symptoms and results of ordinary physical examination, as yet generally utilized for obtaining diagnosis.

This value of obtaining the facts determined by these special methods in addition to those of the history and physical examination is demonstrated in a general way by the great accuracy of these records of diagnosis. Of course, we cannot say what the results in the same cases would have been had the special findings not been at hand and the history and physical examination been the only data for diagnosis. It is safe, however, to say that it would have been less correct and that in many instances guess work would have replaced scientific deduction.

Medical Progress.

INFLUENCE OF RÖNTGEN RAYS ON THE OVARIES.

BY W. L. BURRAGE, M.D., BOSTON.

HALBERSTAEDTER [1] exposed five rabbits to the action of the Röntgen rays in such a way that the ovarian region of one side only was under the influence of the rays. Macroscopically, a diminution in the size of the ovaries could be seen, and microscopically, there was a disappearance of Graafian follicles. The author then examined the ovaries of another set of rabbits under anesthesia before exposing them to the rays. They were then subjected to the influence of the rays and the same ovarian condition was subsequently found. The practical conclusion to be drawn is that when the Röntgen rays are used therapeutically upon women, the ovarian regions should be protected against their influence.

[In this connection and in connection with the favorable reports of the action of the x-ray on carcinoma of the uterus recently reported we must take into consideration the conclusion which Vose and Howe reached [2] from a study of 120 cases of cancer treated with the x-ray. They found that, taken as a whole, the clinical cases show that the only cure of cancer by the x-ray is by destruction and exfoliation. This destructive process is a slow one, and acts very superficially. Being non-selective in its action the x-ray cannot be used strongly enough to effect destruction of anything but the shallowest tumors without serious injury to the overlying and surrounding tissues, or, in other words, without producing such a burn as experience shows in all probability never would heal.]

DEGENERATIONS AND PELVIC COMPLICATIONS IN FIBROID TUMORS OF THE UTERUS.

J. C. Webster [3] adds his experience in the operative treatment of fibroids to those already noted in these columns. He has operated on 210 cases of fibroids and has found degeneration of the tumor in 52 cases as follows: Calcareous, 2; edematous. 6; cystic, 13; myomatous, 4; suppurating, 10; adenocarcinoma of cervix, 1; sarcoma, 2; hemorrhagic, 3; necrobiosis, 11. In 164 instances pelvic complications were noted: Broad ligament development, 11; prolapsus uteri, 7; retroversion of the uterus, 11; hematosalpinx, 6; ovarian cystomas, 12; unilateral salpingo-ovaritis, 7; bilateral salpingo-ovaritis, 42; unilateral ovaritis, 3; bilateral ovaritis, 29; hernia, 4; appendicitis, 26; pregnancy, 6. The frequency of diseases of the ovaries and tubes is to be especially noted, *i. e.*, in 99 cases out of 210 pathologic changes in these organs was noted. Renal complications were present in about 30% and cardio vascular symptoms in about 25%. There was a mortality of seven cases.

In the discussion of this paper Dr. Barton Cooke Hirst spoke of his experience founded on the operative treatment of 189 fibroid tumors. He had seen the following degenerations: Three sarcomatous, five cystic, four necrotic, two myomatous, and one calcareous. In about 50%

there was some pathological condition of the tubes and ovaries, usually in the shape of old adhesions, occasionally a hydrosalpinx and very rarely indeed a pyosalpinx, not in 2% of the cases. Adenocarcinoma of the corpus occurred in one case.

ABORTION AMONG TOBACCO WORKERS.

Guido Pieraccini [4] has examined the clinical records of the obstetric clinic in Florence with a view to ascertaining whether the female workers on tobacco have more frequent interruptions of pregnancy than other women. The records examined include the years from 1894 to 1903. There were 84 cases of pregnancy among tobacco workers who came to the hospital for treatment for pregnancy: of these 49 were delivered at term, and 16 prematurely, or 36.90% of interrupted pregnancies. During the same period of 386 patients not tobacco workers only 21.50% had premature deliveries. Hence the author concludes that tobacco work had a bad influence on the continuance of pregnancy. This is brought about either by an intoxication conveyed through the placenta killing the fetus, or by nicotine directly stimulating the uterus to contraction. Nicotine, however, does not seem to prevent conception.

VAGINAL OVARIOTOMY.

O. Bürger [5] reports 110 cases of vaginal ovariotomy from Schauta's clinic. Of 84 cases of simple ovariotomy where no other operations were done at the same sitting there was no mortality. Schauta operates on cysts, even large enough to fill the entire abdominal cavity, by this route.

The convalescences were remarkably uneventful in the series of cases reported and the condition of the uterine organs most satisfactory afterwards. In 22 women examined with reference to the recurrence of menstruation after operation, menstruation appeared in an average of about five weeks, whereas the average after abdominal ovariotomy has been ten and eleven weeks.

THE TRIAD IN FIBROMYOMA UTERI.

R. Paulli [6] thinks there is a triad with fibroids like the triad in exophthalmic goitre and in Addison's and in Bright's disease. The triad with myoma is the tumor in the uterus, a series of nervous symptoms — neurasthenic, neuralgic or mental — and a general vascular disturbance entailing a tendency to thrombophlebitis. It is impossible to say positively which element of this triad is the primary element.

Paulli reports a case of thrombophlebitis alternately in legs and arms occurring in a woman forty-six years of age having a fibroid of the uterus. She recovered under symptomatic treatment and has been in comparative health for a year. He believes that a developing myoma is not only a local affection but that the organism suffers generally. Myofibrosis, he thinks, is a frequent coincidence of myoma. Kessler of Dorpat found myofibroma of the heart in a patient who had succumbed the seventh day after extirpation of a myoma in the fundus uteri weighing 56 pounds. Embolism of the pulmonary artery occurred in three of the author's cases of myoma operations and Rosthorn, Michel, Burckhardt, Hofmeier and Czempin had a total of fifteen cases of death from this cause. Kaarsberg found pigmented degeneration of the myocardium in 4 out of 8 myoma cadavers, 2 of the deaths being due to embolism of the pulmonary artery.

THIGENOL IN GYNECOLOGY.

Dr. Raoul Blondel [7] has employed this agent for a year, both in dispensary and in private practice, and considers it a very valuable one. Its action is that of ichthyol, but it is to be preferred to this substance, since it is more effective and has none of the disadvantages of the latter, either in regard to odor or to absorption and consequent toxic action. Perhaps the best effects of this drug are achieved in inflammations of the adnexa, parametritis and perimetritis. The author uses in these conditions tampons of equal parts of thigenol and glycerine and states that rapid cessation of the pain and absorption of the exudate result. Thigenol is valuable also in gonorrheal inflammation of the urethra and Skene's glands. Here it may be used pure on small tampons of cotton inserted just after micturition or it may be introduced into the glands through a platinum needle.

PYROGALLIC ACID IN CYSTITIS.

M. F. Minet [8] has made observations on 60 cases of tuberculous cystitis in all stages of the disease treated by instillations of pyrogallic acid. He uses 75 drops of a 1:50 or 1:20 aqueous solution after previous emptying of the bladder, and reports good results.

BENIGN CHORIO-EPITHELIOMA.

Velits [9] describes the case of a multipara, aged thirty-four years, who, a month after the excision of a vesicular mole, began to have uterine hemorrhages. A growth was removed, which was pronounced to be chorio-epithelioma. The uterus was extirpated and the patient had remained well for a year.

From a study of this one and other specimens the writer concludes that spontaneous cure of these neoplasms may occur through necrobiosis, as shown by the lowered vitality and disappearance of the cells of Langhans and the appearance of wandering cells, which show the separation of the syncytium. *Hammerschlag* [10] reports only four cases of chorio-epithelioma from the Königsberg clinic among five thousand gynecological cases, to which he adds a fifth. The neoplasm developed each time after a previous abortion; three after molar pregnancy, the time varying from five weeks to two and a quarter years.

THE RESULTS OF VENTRAL SUSPENSION OF THE UTERUS AT THE JOHNS HOPKINS HOSPITAL.

Gerry R. Holden [11] analyzes the results obtained in 445 cases of ventral suspension in which he has been able to obtain a post-operative history.

The intervals of time between the operations and the subsequent reports varied from four months to eleven years. A majority of cases were between one and five years after operation.

He concludes that the results are better when injuries of the pelvic floor are repaired at the same time that suspension of the uterus is done. The suspensory ligament as observed in 19 secondary operations was usually a band or one or two cords averaging from 3 to 5 cm. in length. After one year the length of the ligament does not depend on the time elapsing since the operation nor on the thickness of the ligament. The great majority of patients who have had the suspension operation performed have no adverse symptoms referable to the suspension during pregnancy or labor. The most frequent adverse symptom which can be referred to the operation is abdominal pain during pregnancy.

This pain seemed to be observed in the cases where fixation of the fundus uteri had resulted from suppuration in the abdominal wound. The statistics of recurrences of retroposition after labor were meager and not convincing; where labor had not supervened the recurrences were not more than 5%.

[It is well to bear in mind the distinction between ventral suspension and ventral fixation in considering the remote results of these operations. Fixation may be intentional, or accidental from the septic healing of the abdominal wound. Whenever the fundus uteri is firmly fixed to the abdominal parietes pain during pregnancy and dystocia are to be expected. It is to be regretted that authors who are reporting cases of Cesarian section following ventralfixation so seldom give the details of the original operation and the result obtained.]

INNERVATION OF THE FEMALE GENITAL ORGANS.

Jung [12] has found in full-term infants a large ganglion at the level of the vaginal fornix and cervix uteri in the connective tissue of the parametrium. It lies laterally at quite a distance from the uterus and vagina. Radiating from this are very numerous nerves with ganglia in both a caudad and cephalad direction, the former extending to the lower third of the vagina, and the latter to the ureter and bladder, under the peritoneum of the vesico-uterine fold and extending also to the posterior uterine wall. Jung found in the uterus itself large ganglia lying under the peritoneum. He claims that the cervical ganglion of the uterus does not represent a plexus but a conglomeration of all the branches of the genital nerves. This ganglion has not the dimensions claimed for it by previous investigators, as its substance is largely composed of connective tissue. According to his findings the entire vaginal structure as far as the muscular pelvic floor is interwoven with a fine network of nerve fibers interspersed with ganglia to a degree which had previously not been known to exist in the human subject. This peri- and paravaginal plexus is in connection with the ganglion above described.

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[7] Révue Dethérapeutique, 1904, No. 24, p. 834; Amer. Journ. Med. Sciences, April, 1905.
[8] Le Progrès Médicale, 1904, No. 47, p. 420.
[9] Zeitschr. für Geburts. und Gyn., Bd. iii, Hft. 2; Amer. Journ. Med. Sci., April, 1905.
[10] *Ibid.*
[11] Amer. Journ. of Obstet., vol. li, p. 469.
[12] Monats. fur Geburts. und Gyn., January, 1905; Amer. Journ. Obstet., li, 562.

(*To be continued.*)

Reports of Societies.

NATIONAL ASSOCIATION FOR THE STUDY AND PREVENTION OF TUBERCULOSIS.

First Annual Meeting, Washington, D. C., May 18 and 19, 1905.

ADDRESS OF THE PRESIDENT.

Dr. Edward L. Trudeau said he had never pictured such widespread interest as had been shown in this attack upon tuberculosis. This, the first regular meeting of the association, marked an epoch in the history of the struggle against the disease in America. The great white plague had been so gigantic and hopeless a problem that until recent years men had accepted the holocaust of human life and the terrible suffering entailed on humanity as an inevitable decree of fate, and had either looked on with Oriental fatalism, or turned their heads and passed by on the other side with a hopelessness born of despair and ignorance of the etiology of the disease. The pathologists had labored faithfully to solve the problem, but only by the application of the experimental method and with the birth of the new science of bacteriology had men been inspired with new hope and led to the understanding that since tuberculosis was a communicable disease it was also to a great extent a preventable one. The realization of this truth had resulted in an accumulation of evidence as to the practical efficiency of preventive measures, and in improved methods of diagnosis and treatment. It had now been demonstrated that the disease could be cured by the open-air method. The disease was now recognized as communicable, preventable, and, in its earlier stages, curable. The Association, the speaker said, was now a part of the vast international movement which had been slowly but steadily spreading over the world. It should be something more than a medical association. It should combine and direct the scattered efforts of individual workers and existing associations, and extend and expand the field of these efforts. It should combine the laity, the profession, the state and the nation. One of the first steps would seem to be a plan for bringing each state, by means of one or more delegates, in touch with the national association. The next move should be education, first of the people, and second, through them, of the state. Then the people would soon demand and obtain effective legislation for the control of the disease. Education should begin by teaching in the public schools the main facts relating to the transmission of tuberculosis; teaching just where the danger lay and how best to avoid it; insisting on the value of hygienic measures of prevention, and dwelling as little as possible on the details of the bacteriology, which would tend to produce in imaginative young minds exaggerated and fantastic

impressions of the dangers of infection. Education by teaching just where the danger lay, and the simple measures necessary to avoid it, would tend to quiet and control the unreasoning and ignorant terror of infection which often worked such hardship and injustice to the consumptive. Early detection of the disease was the first requisite for success in its treatment, and it was through education alone that incipient cases would be induced to seek advice early and make at the right time the sacrifices necessary for their recovery. Education would also help crush the vampire of quackery, which preyed ever on the misfortune and ignorance of the poor consumptive, appealing with devilish ingenuity, through specious advertisements of mysterious specifics and sure cures, to his credulity and hope, masquerading under the guise of science and even of philanthropy to wring from him his small savings. He thought that medical schools, too, should give more careful instruction as to the early recognition of tuberculosis; that summer courses could be given with great advantages at the sanatoria. It had been said that "the degree of civilization of a people will in time be indicated by the figures of its death-rate," and if that be true, this association had indeed a great responsibility and one which it seemed well fitted to assume.

ADDRESS OF THE FIRST VICE-PRESIDENT.

DR. WILLIAM OSLER referred to the needs of education in regard to tuberculosis and said there were two aspects to the educational problem; first, the getting of knowledge, which was not a very difficult thing; second, the making of that knowledge effective. The getting of knowledge and the gaining of wisdom were totally separate, and never were truer words said than those by Tennyson: "Knowledge comes, but wisdom lingers." There were, the speaker said, three classes to educate: the public, the profession and the patient. The public, he said, was awake, but sitting on the side of the bed, not yet dressed, but it was a great achievement to get the public that far. The public had three great duties, the first of which was the enactment of good laws, and it was nice to be able to say "New York laws," for New York, in spite of its size, its frivolity, and other things which need not be mentioned, had in this respect set the pace for the other cities; second, the proper care of the early tuberculosis case; third, the care of the hopeless case, and it was from these latter cases that the disease was most often spread. He thought the education of the profession, too, just as important as the education of the public, of which it was a part, and the failings of which it possessed in a minor degree. The early recognition of the disease was by no means easy, and the profession was as yet by no means educated to the point of dealing with it; the profession did not always recognize the cases early. An important point, too, was the recognition by the profession of the efficacy of the open-air treatment. The education of the medical students in the matter of early diagnosis needed to be improved upon. This was a very difficult problem, as the hospitals would not take tuberculous patients. He thought the general hospitals should always take a small group of acute cases of the disease, including miliary tuberculosis. They should also take in a few of the early cases just to show the students, doctors and nurses what could be done. Every large general hospital should have in connection with its dispensary a tuberculosis department. The advantages were very great. The tuberculosis cases should be encouraged to come and the nurses encouraged to look after them. Lastly came the education of the patient, which was a most difficult and trying task. In this connection, Dr. Osler thought that there was not a greater mistake than to keep from a patient the knowledge that he had tuberculosis, as it was only by having that knowledge that recovery might be expected. The National Association should, then, stimulate and support work along these lines, and he trusted that the good work so well begun would continue. In closing, Dr. Osler said he could not sit down without bearing testimony to the work of one man in this country in connection with the disease. His work had been an inspiration to all and had been characterized by courage under circumstances that few could bring to bear and yet overcome. It had been characterized by abundant enthusiasm of a true scientific nature. He did not know that there was one thing in his career that impressed him more than that he could have kept alive the fires of enthusiasm in the way he had. He had had that intimate care of his patient which had characterized him above all other things, and, lastly, he had had the true humility of a great man.

ADDRESS BY THE SECOND VICE-PRESIDENT.

DR. HERMAN M. BIGGS referred to the difficulty of obtaining hospitals for infectious diseases and mentioned the tuberculosis hospitals in New York within a very short distance of the scarlet and typhoid fever hospitals, at which between seventy and eighty absolute cures had been made within the last year without any infection having been conveyed from one of the hospitals to the other. People, he said, were getting out injunctions because of the decrease in value of property near these institutions, but the action showed such a total want of conception of the real dangers to public health that there should be a public protest against their move. Speaking of the regulations pertaining to the disease, he said that many cities were making no systematic effort to enforce them, and that in that respect New York stood far in the lead. He thought that regulations should be laid down in the different cities under the jurisdiction of the most eminent men in the profession in those cities. He thought it hardly necessary to discuss the matter of enforced registration as a necessary preliminary to any systematic scheme for the sanitary supervision of the disease, and yet practically enforced registration did not exist anywhere in this country except in New York and one or two of the smaller cities. He, however, did not deem it best to excite radical action in this matter; it must be a matter of education. In New York the advisory board had been found of great service. It was composed of the most eminent men in the profession, and when the public found that whatever action was taken by the board had first been approved by these medical men, it gave a degree of confidence that nothing else could have done. He called attention to the fact that tuberculosis was not a contagious disease in the sense that smallpox, scarlet fever and measles were, and thought this fact should be constantly kept before the lay mind. That we believe that it is an infectious and communicable disease, but only communicable under conditions where the simplest sanitary requirements were neglected and where there was constant and continuous exposure; that a case might be free of danger to the most intimate associates if the simplest precautions were taken. If this were clearly understood by the public, phthisiphobia would be removed. He thought that when we were able to enforce registration there would be but little difficulty in dealing with the disease in any community. So long as the patient was under the supervision of a physician, it could be presumed that he would take all the necessary precautions; when he passed out of the hands of the physician the department should know it. Dr. Biggs thought the National Association had every

reason for congratulation at this, its first meeting, and had a bright prospect in a great field of usefulness, and the best omen at this first meeting was that it should have been presided over by such a man as Dr. Trudeau.

Thursday Afternoon Sessions.

The sociological section was presided over by Mr. Homer Folks, New York, who delivered an address on "Health as an Investment," in which he referred to the work that had been done in New York, the result of which was a very notable decrease in the death-rate from tuberculosis. The campaign against tuberculosis had contributed materially to this good result. As money was the sinews of war, so it was the sinews of this warfare. In the educational campaign thousands of circulars had been printed in many different languages. He advocated the expenditure of large sums of money in order to make the best use of the precious, recently acquired knowledge in order to accomplish the greatest result in the shortest possible time. No city, he thought, could find a more appropriate subject for permanent investment, yielding larger returns, than in carrying into effect the measures set forth at this meeting for the study and prevention of tuberculosis.

Taking part in the discussion of this address were Thomas Darlington, Commissioner of Health of the City of New York; Mr. Charles W. Weller, of Washington, who said that with the exception of two other cities, Washington had the lowest death-rate from tuberculosis; Christopher Easton, Newport; A. M. Wilson, Boston; Dr. Biggs, New York; Dr. J. H. Lowinson, Cleveland; Mr. Stockdale, Pennsylvania; Dr. Lawrason Brown, New York; and Dr. Jacobs of Maryland, nearly all of whom favored the plan of gaining money to carry on the practical needs of the campaign against tuberculosis.

Mr. Edward T. Devine, New York, read a paper on "A Working Program for Associations for the Prevention of Tuberculosis, National, State and Local," in which he said that the problem for laymen, for legislators and public officials, for the public press and other instruments for molding public opinion, in relation to the scourge of tuberculosis, could be defined as the centering of complete responsibility upon the medical profession, but that could only be done by meeting the conditions which authoritative medical opinion prescribed as essential. When it had been shown that hospitals and sanatoria were necessary, it was no more the duty of physicians than of others to secure their establishment. The formulation of a positive program would have at least ten features: (1) The maximum of sunlight and fresh air for all mankind; (2) an abundance of simple and yet sufficiently varied and nourishing food; (3) early diagnosis of every case by the family physician; (4) registration of all cases, whether in tenements or palaces; (5) the establishment of hospitals for advanced cases; (6) the establishment of state, municipal and private sanatoria for the treatment of cases in the earlier stages; (7) publicity as to the means of prevention and hygiene; (8) conference for interchange of views and experiences; (9) relief in various forms for those that must be treated at home; (10) further research.

The clinical and climatological section, Dr. Norman Bridge, Los Angeles, chairman, was, in the absence of Dr. Bridge, presided over by Dr. S. G. Bonney, Denver, the Secretary.

Introductory report of the Committee on Clinical Nomenclature, Dr. Vincent Y. Bowditch, Boston, chairman: The Committee recommended in its report the adoption of a translation, with some modifications, of Turban's scheme for a method of comparative statistics for pulmonary tuberculosis; from *Tuberculosis*, monthly publication of the Central International Bureau for the Prevention of Consumption, September, 1904. (See printed copy of report herewith, marked exhibit "A.") The Committee suggested the trial of this scheme for one year.

discussion.

Dr. John H. Pryor, Ray Brook, N. Y., said the idea of trying Turban's scheme was arrived at for the reason that it had been accepted in Germany, England and France, and the idea had been to make a modification of it for use in this country so that the foreigner could understand our reports and we theirs. It was not used as it was because it would obviously meet with objection on some points, particularly as to the classification of cases. The idea was to use the scheme in conjunction with the regular form for reporting cases which had been in use here for years. He asked that it be accepted tentatively and tried for a year.

Dr. Stengel, Philadelphia, thought the Committee had acted wisely in adopting a plan that would be international, and suggested one or two minor changes in the wording.

Dr. V. C. Vaughan, Ann Arbor, agreed with Dr. Stengel that it would be best to accept the classification proposed by the Committee, as it would give uniformity with other nations. He rather objected to the use of the word "cured," and suggested "quiescent" as a substitute.

Dr. Linthicum, Baltimore, spoke in favor of retaining the word "cured," as otherwise patients would be discouraged.

The report of the Committee was adopted by vote of the section.

Owing to the absence of the chairman, Dr. Norman Bridge, Los Angeles, his paper, "On Some Usually Neglected Dangers from Sputum," was read by title.

The Relation of Tuberculosis to Life Insurance and Insurance Companies.

Dr. C. L. Greene, St. Paul: The writer referred to the very definite interest that insurance companies had in the subject and spoke of the mutual life insurance companies as philanthropic institutions. He showed the heavy death-rate, causing a large proportion of the payments for deaths in such companies to be due to tuberculosis. Every corporation that insures life should take a deep interest in the work of this association. He commented upon the fact that common honesty was often lost sight of by the people in the desire for life insurance, and careful investigations were necessary. In concluding, he suggested that the executive officers of the association bring into active membership the medical directors and officers of the life insurance companies.

discussion.

Dr. L. F. Flick, Philadelphia, asked if it would be feasible to have the insurance companies insert a clause in their policies to the effect that in the event of the policy holder developing tuberculosis and applying early enough to the company, he would be sent to a sanatorium for treatment?

Dr. F. I. Knight, Boston, called attention to the fact that the German insurance companies do place their risks into sanatoria, and have erected sanatoria for their policy holders. He also referred to the very reckless way in which agents of the companies take in the risk for the sake of the first premium.

Dr. Greene, in closing, said that he thought it doubtful if the companies would at the present time be willing to put in such a clause as Dr. Flick had sug-

gested. The chief object in presenting the paper had been to try to secure the co-operation of the companies with this association in the dissemination of literature.

INTRODUCTORY REPORT OF THE COMMITTEE UPON EARLY DIAGNOSIS, DR. ARNOLD C. KLEBS, CHICAGO, CHAIRMAN.

DR. KLEBS said that while the typical cases of tuberculosis offered but little difficulty in the way of diagnosis, during the incipiency of the disease few symptoms existed. It was one of the most destructive of all diseases, and its very early recognition, therefore, a matter of the greatest importance. The bacilli appear, he said, only after the breaking down of the tubercles, so that these changes might be grave before the appearance of the bacilli in the sputum. He referred to cases where the bacilli were found in the sputum as open cases, those where they were not found as closed. Whenever certain signs and symptoms justified suspicion, the patient should be watched closely and examination repeated at frequent intervals. Search for the bacilli in the sputum had, unfortunately, brought about neglect of the constitutional examination. The predisposing factors, as unhygienic mode of life, occupation, etc., must be taken into consideration. The symptoms of incipient tuberculosis rarely offered anything typical. It might resemble many other conditions, as anemia, dyspepsia, bronchitis, etc. Inspection revealed conditions of development and stature which might be indicative of at least a predisposition to the disease. Of great importance was the temperature; slight rise in the evening should arouse suspicion; a two-hour record for a period of several days should be taken. Physical examination of the chest should be carefully and properly performed. Signs: retardation of movement over the affected portion; vocal fremitus gave but little information; percussion and auscultation over all parts, always comparing the two sides. The use of blue pencil, marking the border lines was urged. Marked dullness rarely found in the incipient disease. Slightly diminished respiratory murmur was a valuable sign. Earliest manifestations; appearance; râles over the apices; if cough present, gurgling râles; pleuritic friction sound often heard at early period in axillary line between fifth and sixth ribs. Tuberculin was a very important diagnostic method, but required too great care and special apparatus for general use. The speaker concluded that the careful, painstaking application of the simplest methods would bring about much earlier diagnosis than is usually made.

DISCUSSION.

DR. EDWARD G. JANEWAY, New York, thought the report an admirable one as representing the methods and possibilities of detecting the early stages of tuberculosis. Lack of care and of re-examination was the cause of most failures in recognizing the disease earlier. The disease might exist in its earliest stage without any of the physical signs being present. He strongly recommended more than one examination before pronouncing that there was no trouble. Too little, he thought, was often made of hemoptosis, which should be strongly suggestive of tuberculosis.

DR. F. I. KNIGHT, Boston, said that the earliest possible recognition of the disease was of the greatest importance. Too often the patients were treated by the family physician for other conditions, as malaria, etc., before the true state of affairs was recognized. Cases beginning with anemia and nervous dyspepsia were often overlooked. He thought, too, that the diagnosis was sometimes made on insufficient grounds and homes broken up unnecessarily. We should not wait, however, for a positive diagnosis before putting the patient in the best way for recovery. In the absence of signs that are pathognomonic, we should be very careful about making a positive diagnosis. Hemoptosis might be due to mitral disease, and this should not be overlooked.

DR. J. H. PRYOR, Ray Brook, N. Y., regarded the report as one of the safest, clean-cut and judicious he had ever heard on this subject.

Dr. Klebs, in closing, said that it had been the endeavor to bring out the most important points in the early diagnosis with least apparatus.

On motion of Dr. V. C. Vaughan, the report was adopted.

(To be continued.)

Recent Literature.

Atlas and Epitome of General Pathologic Histology. By DR. H. DÜRCK of Munich. Edited, with additions, by LUDVIG HEKTOEN, M.D., Professor of Pathology, Rush Medical College, in affiliation with the University of Chicago. With 172 colored figures on 77 lithographic plates, 36 text cuts, many in colors, and 371 pages of text. Philadelphia, New York, London: W. B. Saunders & Co. 1904.

This is an admirable work. In the colored plates the microscopic appearances of pathological conditions are reproduced with wonderful fidelity. If it were possible to learn pathological histology from a book without a microscope, then surely this would be the book. In the lithographic printing no less than twenty-six colors were sometimes used to reproduce the original piantings. The work deals with circulatory disturbances, atrophy, retrogressive metamorphoses, reparative processes and tumors. Nearly half the volume is devoted to tumors. The text gives an excellent summary of present-day knowledge of general pathological histology. Additions of value have been made by the editor.

Manual of Serum Diagnosis. By DR. O. ROSTOSKI, University of Würzburg. Authorized translation by DR. CHARLES BOLDNAU. 12mo. New York: John Wiley & Sons. 1904.

This brochure appeared originally in that admirable publication the Würzburger *Abhandlungen*. Additions have been made to this English version by the author and editor. It contains an excellent résumé of recent literature on the important subject of serum diagnosis with references to the original sources. The work of translation has been well done. Much space is devoted to typhoid and paratyphoid fevers. Fickler's method of performing the Gruber-Widal test and the use of formalized cultures are described. In the section on paratyphoid fever there is no mention of the work done in America, although knowledge of this disease was gained by observations and studies made in this country. The method of performing the precipitin blood test, important in medico-legal work, is clearly described. The result of recent studies of the serum diagnosis of tuberculosis is given and the author concludes that the Arloing-Courmont reaction is untrustworthy.

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A LESSON ON THE ADVANTAGES OF FRUGALITY IN DIET.

COL. VALERY HAVARD, of the United States Army, who was recently with the Russian forces in Manchuria, made an address at the meeting of the Medical Association of the Greater City of New York on Oct. 9, in which he said that the lesson of the advantages of frugality in diet was never so impressively demonstrated nor on so vast a scale as during the Russo-Japanese war. Both Russian and Japanese were fed on rations which American and English soldiers would have rejected with scorn, and yet, for rugged health, strenuous work and endurance of hardships during a long winter campaign, he thought it doubtful whether these troops had ever been excelled.

The Russian ration in the field consisted of about 2 lbs. of black rye bread, 14 oz. of fresh meat, 3 or 4 oz. of cereals or grits, and some vegetables, tea and sugar; while in emergencies these quantities, especially the meat, were often reduced. The black bread is not palatable to the American taste, and is probably not very nutritious, but it possesses the excellent quality of being laxative, so that constipation is unknown in the Russian army. In the emergency ration the black bread was replaced by hard tack, which is simply the same bread dried up, and the fresh meat by 8 or 10 oz. of canned beef. Each company of soldiers had an ambulant or traveling kitchen, on wheels, drawn by two horses, and it consisted chiefly of a huge boiler with furnace underneath. Wherever the company went, the kitchen followed, so that while the men were on the march the dinner was cooking, and could be served up as soon as there was a halt to make camp. All the constituents of the ration, bread excepted, were put into the boiler, and the result was an excellent soup. This soup with whatever vegetables it contained having been eaten, the meat was forked out from the boiler, sliced and distributed as a second course.

As is now well known, the health conditions among both the Japanese and Russian troops were such as to completely reverse the experience of all former wars; instead of the mortality from disease greatly exceeding that from wounds, it was much less. Looking, for instance, at some of the statistics of the Russian army in Manchuria, we find that according to official reports, the ratio of sick per thousand men during the year 1904 ranged from a minimum of 12 in April to a maximum of 39 in July. These ratios are less than for troops at home in Russian garrisons during the same months, and less than among our own troops in time of peace. During the year the total number of sick reported was less than 80,000. Of these, more than one half had been returned to duty by the last day of December, and only 2,730 died. In computing the Russian statistics of the war to the close of hostilities, about May 1, it is found, approximately, that the total wounded is to the total sick as 4 to 3, while the total mortality from wounds is to that from disease as 47,000 to 6,000, or about 8 to 1, a result far beyond the most sanguine hopes of military hygienists. Yet, while there was no epidemic among the troops, infectious germs were not lacking. There were always cases, not only of typhoid fever, but also of typhus, recurrent fever, dysentery and anthrax. These diseases, however, never spread beyond the sporadic stage. Thus the number of cases of typhoid fever seldom, if ever, exceeded 5 per thousand men, a ratio that contrasts very strongly with our own ratio of 150 and more per thousand in our camps of 1898.

Having referred to the good health of the Japanese troops, Colonel Havard discussed the question as to how the low morbidity and mortality of the Russian and Japanese soldiers in the Manchurian war was to be accounted for. Doubtless, he said, several factors contributed to the result: The scattering of the troops over a very long line, a sufficiency of good hospital accommodations, the prompt removal of suspicious cases from camps, the general use of tea as a beverage (that is, water which has been boiled), and, so far as the Russian army was concerned, the general use of soup, which is food and drink in sterilized and very digestible form, and of black bread, which by its laxative effect pre-

vented the accumulation of infectious matter in the intestines. But when all these apparent causes of the wonderful health conditions noted have been taken into account, we are conscious that there remains an underlying cause still unexplained. For it is a fact that various infectious diseases were present, and that the conditions were favorable for their spreading. Under stress of thirst, in warm weather, the soldier of any nation will drink water wherever he finds it, without considering whether it is pure or polluted, and such was the case in Manchuria. Fecal matter was abundant enough in camps, and always more or less exposed. Flies swarmed in summer and clouds of dust filled the air in winter. Furthermore, the men were necessarily much crowded in dugouts or underground huts, with very defective ventilation. Yet, in spite of these conditions, which would have rapidly decimated an American, English or French army, the Russian and Japanese troops remained in excellent health. This meant, in Colonel Havard's judgment, that they were not susceptible to the same extent that we are to typhoid, typhus and dysentery, that they enjoyed a larger degree of immunity to such diseases. As to this comparative immunity to typhoid fever, which is found not only among the Japanese and Russians, but many other oriental peoples — Chinese, East Indians, etc. — he also noticed it in Cuba during our military occupation of that island. Although we brought an abundance of infection with us and scattered it broadcast over the island, typhoid fever never spread. This disease has always been rare among the natives, except in the better classes, whose diet and habits approximate our own.

To account for this immunity, he said, two theories suggest themselves. First, it is possible that in countries where hygiene and sanitation are still primitive or imperfectly understood, so that the inhabitants are constantly exposed to infection, a large proportion of the population contract the disease in infancy or childhood, in a mild form, and thus become immune in adult life. Another theory, and one which he believes more worthy of acceptance, is that which is based on diet. Those countries enjoying more or less immunity to typhoid fever are comparatively poor countries, where frugality is necessarily enforced and has become a habit, where meat is scarce and but little used, where the people, therefore, are practically vegetarians. It seems reasonable, then, to believe that this immunity may be the result of a vegetable diet; under this the intestinal media being less favorable to the growth of the typhoid bacillus, or else a bacterial flora produced which is inimical to this bacillus. As confirmatory of this hypothesis, it has been observed in some countries, as in Cuba and India, that the ratio of typhoid fever increases among the richer classes, or those departing from the native frugality and freely indulging in proteid diet.

In the course of the discussion at this same symposium on foods and nutrition held by the Medical Association of Greater New York, and referred to in our New York Notes, Dr. Seaman spoke of the striking illustration of the effects of a defective diet as furnished by outbreaks of disease in both the armies in Manchuria, which were plainly attributable to diametrically opposite causes. During the long and terrible siege of Port Arthur, the Russians, who were hemmed in by land and by sea and were unable to obtain vegetables, suffered severely from scurvy, while the Japanese, subsisting on a diet almost exclusively of vegetables, especially one, namely, rice, deficient in nitrogenous elements of nutrition, suffered equally from beri-beri.

REPORT OF THE SURGEON-GENERAL OF THE UNITED STATES ARMY.

IN our issue of Sept. 28 we commented upon a bill which has recently been circulated, designed to increase the efficiency of the medical department of the army. The annual report of the surgeon-general to the Secretary of War for the year ending June 30, 1905, is now before us, giving, as is its custom, details of the medical conditions existing throughout the army.

Attention is drawn to the changes which have taken place in the army since the Spanish-American war, due largely to the enlargement of the geographical limits of the United States. Troops, for example, are now serving in Alaska, Hawaii, China and the Philippines, in addition to those stationed in the United States proper. Previous to the war there were practically no native troops, with the exception of a few Indians; now the natives of both Porto Rico and the Philippines are serving in the army. This has necessitated a certain change in the arrangement of the annual report. The term "army" is used as indicating merely the American army proper.

The efficiency of the army has been most affected by the frequency of venereal disease, which alone caused 16% of all admissions to the hospitals, 28% of all non-effectiveness, and 18% of all discharges for disease. This deplorable

situation can only be rectified by an appeal to the civil authorities and by the proper recognition of the infectiousness of this type of disease. The second type of disease in importance is that relating to the digestive tract, but here there is decided improvement over the figures for last year. There was likewise a reduction in the percentage of malarial disease, which has fallen from first place to third in order of occurrence. Pneumonia has taken first place as a cause of death, with tuberculosis second and typhoid fever third. It is interesting that in spite of the fact that a large part of the army served in the tropics, there was not a single admission for snake bite. An important comparison is made with foreign armies regarding various medical data. This plan, if carried further, should give statistics of value. So far as figures are at present available, it appears that the highest admission rate to hospitals exists in the American army, the lowest in the Russian; the highest death-rate occurs likewise in the American army, the lowest in the Prussian; the highest non-effective rate is also in the American army, the lowest in the Prussian. It is not maintained that these figures represent the exact facts, owing to the different methods of tabulation used in different countries, but so far as they go, such estimates are of significance. Alcoholism in the American army as compared with the British army is high, but this may be partly explained by the fact that in the latter service only admissions to the hospitals are counted in the tabulation. The high death-rate in the American army from tuberculosis is explained, since in the American army patients are sent to a sanatorium while still retained in the service, whereas in other armies they are discharged. Tuberculosis is also admitted into the army through a defective system of medical examination of recruits. The prevalence of typhoid fever is explained by the general failure to purify water and the sewage in many American municipalities. The freedom of certain foreign armies from smallpox is put down to the greater care taken in vaccination, a result which might easily be attained in other services were the necessary precautions taken.

The sanitation of various posts is still imperfect. Overcrowding is one cause of this, and another that many buildings are old and dilapidated. These are, however, being gradually replaced by new ones. Surface drainage has, in general, proved satisfactory, but in a few instances complaint has been made of the breeding of mosquitoes in insanitary pools.

Certain special recommendations are made, among which the most important is the question of the relation of the medical department to the hygiene and sanitation of the army at large. It is very rightly maintained that with the expansion of our military occupation the relation of the medical department to matters in which sanitary questions are of first importance should be more clearly defined than at present, and should be binding upon the higher authorities. It is held that the army regulations should state specifically that, except in emergency, no troops would be allowed to embark on ship or rail until the opinion of the medical officer has been obtained that the ship or cars are ready from a sanitary point of view. Such recommendations are eminently reasonable. Recent experience has amply shown that the medical department of an army should go before the fighting force and should absolutely regulate its sanitary arrangements. As we have repeatedly urged, it is to be hoped that this lesson may be thoroughly learned before it is too late. A further recommendation is that, inasmuch as the responsibility for the sanitation of the army rests ultimately upon the line, it is decidedly desirable that the study of military hygiene should be enforced at West Point. The recommendation has, therefore, been made that sanitation be made a part of the regular course at that school, counting for school standing on graduation.

The report, as usual, contains many figures and tables of interest to special students of the subject, but taken in general it should be widely read by all citizens, whether primarily interested in the army itself or in its medical department. Unquestionably the matter which it contains should have a far wider circulation and be more generally read than is at present the case.

MEDICAL NOTES.

The Herter Lectures. — The second course of lectures on the Herter foundation were delivered by Prof. Hans Horst Meyer, M.D., Director of the Pharmacological Institute, University of Vienna, on Wednesday and Thursday, Oct. 4 and 5, at 4.30 P.M., in the auditorium of the Physiological Building, Johns Hopkins Medical School, Washington and Monument streets.

Death of Mr. W. B. Saunders. — Mr. W. B. Saunders, the head of the well-known publishing firm bearing his name, died suddenly at Atlantic City Oct. 1. He had been in ill health for some time previous to his death, but the final outcome

of his illness was wholly unexpected. We understand that Mr. Saunders had provided for the continuation of the publishing house associated with his name, having directed by his will that it be incorporated under the laws of the State of Pennsylvania.

INTERNATIONAL TUBERCULOSIS CONGRESS. — The International Tuberculosis Congress was held at Paris in the first week of this month. It is reported that there were upwards of thirty-five hundred delegates present, among whom were Drs. Knopf of New York, Flick of Philadelphia and Jacobs of Baltimore. Dr. Osler was also present. In the report of the secretary it was stated that thirty-three nations had come together to consider means of combating the disease. Models of hospitals, sanitary dwellings and other exhibits were shown in the corridors of the Grand Palace.

ALVARENGA PRIZE OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA. — Thomas R. Neilson, M.D., for the College of Physicians of Philadelphia, announces that the next award of the Alvarenga Prize, amounting to about one hundred and eighty dollars, will be made on July 14, 1906, provided that an essay deemed by the Committee of Award to be worthy of the prize shall have been offered. Essays intended for competition may be upon any subject in medicine, but cannot have been published. They must be typewritten, and must be received by the secretary of the college on or before May 1, 1906. Each essay must be sent without signature, but must be plainly marked with a motto and be accompanied by a sealed envelope having on its outside the motto of the paper and within the name and address of the author. It is a condition of competition that the successful essay or a copy of it shall remain in possession of the college; other essays will be returned upon application within three months after the award. The Alvarenga Prize for 1905 has been awarded to Dr. Chalmers Watson, of Edinburgh, for his essay entitled: "The Importance of Diet; an Experimental Study from a New Standpoint."

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, Oct. 18, 1905, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 29, scarlatina 16, typhoid fever 33, measles 39, tuberculosis 32, smallpox 0.

The death-rate of the reported deaths for the week ending Oct. 18, 1905, was 16.02.

BOSTON MORTALITY STATISTICS. — The total number of deaths reported to the Board of Health for the week ending Saturday, Oct. 14, 1905, was 199, against 161 the corresponding week of last year, showing an increase of 38 deaths, and making the death-rate for the week 16.52. Of this number 112 were males and 87 were females; 198 were white and 1 colored; 128 were born in the United States, 69 in foreign countries, and 2 unknown; 37 were of American parentage, 150 of foreign parentage, and 12 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 23 cases and 2 deaths; scarlatina, 11 cases and no deaths; typhoid fever, 34 cases and 4 deaths; measles, 15 cases and no deaths; tuberculosis, 47 cases and 22 deaths; smallpox, no cases and no deaths. The deaths from pneumonia were 18, whooping cough, 0, heart disease 22, bronchitis 1, and marasmus 8. There were 16 deaths from violent causes. The number of children who died under one year was 36; the number under five years, 52. The number of persons who died over sixty years of age was 37. The deaths in public institutions were 54.

HOSPITAL FOR PAWTUCKET, R. I. — It has been announced that a hospital is to be erected in Pawtucket, R. I., by Mr. Frank A. Sayles as a memorial to his mother and sister. It is expected to be ready for use within two years.

PUBLIC BEQUESTS. — Through the will of the late Charles T. Baker various institutions and charities benefit in the sum of more than a quarter of a million dollars to be paid after the death of his sister. The medical institutions which are benefited by the will are as follows: Convalescents' Home for Children's Hospital, $15,000; Kindergarten for the Blind, Jamaica Plain, $15,000; Boston Home for Incurables, $10,000; Perkins Institution and Massachusetts School for the Blind, $10,000; Boston Floating Hospital, $10,000; Boston Children's Hospital, $10,000; Hospital Cottages for Children, Baldwinsville, $5,000; Boston Lying-In Hospital, $5,000; Free Home for Consumptives, $5,000; St. Luke's Convalescent Home, $5,000; Massachusetts Infant Asylum, $5,000; Willard Hospital at Bedford, $5,000; Homeopathic Medical Dispensary, $3,000. Many other bequests are made for semi-medical purposes.

ESSEX SOUTH DISTRICT MEDICAL SOCIETY. — The Essex South District Medical Society, a branch of The Massachusetts Medical Society

was organized at the Sun Tavern in Salem, Nov. 4, 1805. The society is, therefore, this year celebrating its centennial, and in commemoration of this fact the Executive Committee has mapped out a program for the year, including a centennial observance and a series of medical meetings to be addressed by physicians of national reputation. It is stated that complete records of the meetings for the hundred years of the existence of the society have been kept, and during this long period there has been no time of inactivity. Dr. George M. Gould of Philadelphia addressed the Society on Oct. 10 on the general subject of tuberculosis. At the same meeting Dr. David Coggin of Salem read a paper on the "Harvard Medical School Forty Years Ago." The November meeting will be devoted to the centennial celebration and no formal medical papers will be presented. Dr. Frank Holyoke of Holyoke will read a paper upon the life of his ancestor, Dr. Edward A. Holyoke, the founder and first president of the society, as well as the first president of The Massachusetts Medical Society. Various historical papers and several others will also be read. Each succeeding meeting of the year will be devoted to one general topic, two of which are pure food and albuminuria.

NEW YORK.

Prof. von Noorden's Lectures on Diabetes. — Prof. Carl von Noorden, of Frankfort, who on Oct. 14 delivered the second lecture of the course before the Harvey Society, has been giving six lectures on Diabetes: Its Pathological Chemistry and Treatment, in the Herter lectureship course at the University and Bellevue Hospital Medical College.

English Commission on Care and Control of Feeble Minded. — On Oct. 10 five members of the Royal Commission on the Care and Control of the Feeble Minded, of England, among whom were Drs. Horatio Bryan Donkin and James Crawford Dunlop, made a visit to Mayor McClellan at the City Hall. Their object in coming to this country is to study the methods pursued here of dealing with idiots and epileptics or defective persons not certified under the lunacy laws.

A Symposium on Foods and Nutrition. — At the opening meeting of the season, Oct. 9, of the Medical Association of the Greater City of New York, there was a symposium on Foods and Nutrition, to which papers were contributed by Profs. R. H. Chittenden and L. B. Mendel, of Yale University, Prof. W. B. Cannon, of Harvard, Dr. Otto Folin, of the McLean Hospital chemical laboratory, and Dr. H. W. Wiley, chief of the bureau of chemistry, United States Department of Agriculture. In addition, addresses were made by Prof. Graham Lusk of New York; Col. Valery Havard, assistant surgeon-general, U. S. A., who was medical attaché of the Russian army; and Dr. L. L. Seaman, who was with the Japanese army during the recent war in the East. Prof. Carl von Noorden was also present and made a few remarks, in which he said that the meeting was unquestionably one of the most interesting and instructive which he had ever attended. Before the meeting, Dr. Satterthwaite, the president of the Society, entertained the distinguished guests of the evening at a dinner which was served in the banquet hall of the Academy of Medicine.

His Body Bequeathed for Dissection. — When George W. Catt, of New York, a civil engineer of large means, died recently, he bequeathed his body to a medical college, "to be used by it in such manner as will be most conducive to the advancement of medical and surgical knowledge." Accordingly, after the funeral services at his residence, his remains were conducted by the pallbearers and friends to the University and Bellevue Hospital Medical College, where they were received by Dr. Egbert Le Fevre, the dean of the college. Previous to devoting the body to ordinary dissecting purposes an autopsy was held, when a very surprising condition was revealed, the pancreas being found in a state of complete atrophy. Its appearance indicated that for a very considerable time it must have been unable to perform its functions, and it was a matter of wonder how life could have been preserved under these circumstances. The post-mortem also showed the presence of cholelithiasis and peritonitis with ulcerations, for which the patient had been treated, but during the course of his illness no indications of pancreatic disease had ever been observed by his medical attendants. It is stated at the Health Department that this is the first instance in the city in which a wealthy man has willed his body for purposes of dissection.

The Strauss Milk Charity. — The summer season of the Nathan Strauss Pasteurized Milk Charity closed on Oct. 1, though these depots, in different sections of the city, remain open throughout the year. The maximum capacity of the laboratories was reached this summer and

the necessity for enlarged facilities for the future is apparent if the constantly increasing demands for the milk among the poor is to be supplied. The number of bottles dispensed during the past year was 2,668,397, as against 2,149,194 for the previous year, an increase of over half a million. In addition, 807,070 glasses of milk were sold at one cent apiece. The Health Department's corps of summer physicians and many institutions and societies availed themselves of the opportunity of supplying the tenement-house population, through Mr. Strauss's generosity, with the Pasteurized milk, and there can be no question that this charity has constituted an important factor in the notable reduction in infant mortality in the city, which has been accomplished within the past few years. In 1891, before it was commenced, the death-rate among children under five years of age was 96 per thousand, while for the year 1904 it was but 63 per thousand.

The Water Supply. — Plans and estimates for the increase of the water supply of New York were laid before the Board of Estimate and Apportionment by the new City Board of Water Supply on Oct. 12, and if the proposed measures are adopted, work in the Catskill Mountains can be commenced at once. The plans outlined, which follow in essentials the report of the Burr-Hering-Freeman Commission, are declared by the water board to furnish the only available means of preventing a shortage in supply of the city at an early date. The estimated cost of developing a water supply of 250,000,000 daily, including storage reservoirs and aqueducts, is $106,212,000, and the engineers report that this equipment could be enlarged so as to develop a supply of 500,000,000, making the total cost of the enlarged system, including a filtration plant, $161,857,000. The board recommends that the new supplies be taken from Esopus, Rondout, Schoharie and Catskill creeks, together with a number of small tributary streams. This increased outlay would provide for the delivery of 500,000,000 gallons daily to a terminal reservoir near Yonkers, the construction of a storage reservoir at Hensico, Westchester County, capable of supplying the city for fifty days, at the rate of 500,000,000 gallons a day, in case the main aqueduct should suffer damage, a conduit of capacity sufficient to deliver 200,000,000 gallons daily to Brooklyn and a pipe line to deliver 20,000,000 gallons daily to Staten Island. The large storage reservoir at Kensico would also be of great value in permitting the water to be shut out of the main aqueduct temporarily for the purpose of inspection, repair and cleaning. The complete development of all the watersheds under consideration would, it is believed, result in a supply of more than 600,000,000 gallons daily. As an incentive to immediate action in increasing the supply, the board refers to the water shortage which existed in Brooklyn for a portion of the past summer, when the consumption so outran the supply that there were hours in the day and even days at a time when houses on upper levels were deprived of water.

Sanitarium for Consumptives. — The preliminary drawings for the New York City sanitarium for consumptives have been approved by the Commissioner of Charities, and as soon as plans can be prepared and the contracts let, work will be commenced on its construction. Last spring $200,000 was appropriated for beginning the sanitarium, and immediately afterwards the mayor instructed Commissioner Tully to have drawings and estimates for it prepared. Raymond Almirall, an architect experienced in hospital construction, was appointed to make these, and together with Dr. J. F. Fitzgerald, the general medical superintendent of the Department of Charities, he visited the tuberculosis sanitariums of Massachusetts and New York State, in order that the plans might include all the most approved conceptions for such an institution. The site selected for the sanitarium is on Staten Island, overlooking the Narrows and the lower bay, where the city owns one hundred and thirty acres of land, and the property is said to include the highest point on the Atlantic coast between Maine and the Gulf of Mexico. The estimated cost of the buildings (exclusive of site) when finally completed is about $2,000,000. The ward buildings are to be placed in the form of an arc, as affording the maximum sun exposure, and each will be abundantly supplied with verandas on to which the beds of the patients can be rolled through windows extending to the floor. The entire roof is to be treated as a roof garden, with the northern end enclosed in glass for use as a sun parlor. Two of these buildings will be given up to single rooms for the care of the more advanced cases. At the terminations of the arc will be grouped the service buildings, with a power house so situated as to be available for the neighboring farm colony and dormitories of the Department of Charities. Midway in the line connecting the ends of the arc will be the administration building, and in the space between

it and the encircling ward pavilions the kitchen and dining hall will stand. Among the other buildings included in the plans are a fine nurses' home, with lecture rooms and library, a chapel for religious services, and an amusement hall. The sanitarium will face due south, and on the north will be protected by extensive woodlands. The buildings are to be reinforced concrete throughout, with red tile roofs, and the iron of the verandas will be painted green. This projected institution is not to be confounded with that for the treatment of incipient tuberculosis, which is an undertaking of the Health Department. It is designed for cases in all stages of the disease, and its location within the city limits will make it available for an immense number of patients who could not otherwise have the benefit of modern hospital treatment. It is anticipated that by the time that the $200,000 already appropriated by the municipal authorities has been expended, accommodations will be ready for at least one hundred patients.

Obituary.

IN MEMORIAM: JAMES READ CHADWICK, M.D.

At the last meeting of the Council of the Boston Medical Library, the first since Dr. Chadwick's death, Drs. George B. Shattuck and Morton Prince were appointed a committee to draw up a memorial. The following memorial was presented, and the council voted that copies should be sent to Dr. Chadwick's family, to the Association of Medical Librarians, and that it be published in the Boston Medical and Surgical Journal.

The Council of the Boston Medical Library desires to put on record its keen sense of the great — we might almost say the irreparable — loss which the Library has sustained in the death of Dr. James Read Chadwick, its librarian. He may well be called the founder of the Library. In the thirty years which have passed since the modest beginnings of the Medical Library in Hamilton Place there have been four presidents, but only one librarian, and we doubt, however prosperous and prolonged its future, that there will ever be another quite his equal in all respects. He conceived it, be brought it into being, he nourished and nurtured and watched over it from day to day and from year to year, and he had his reward in that he at last saw fulfilled the desire of his eyes.

In one of his addresses Dr. Chadwick says: "Every one likes to feel that he has a mission in life." He had more than one, but the first and the last in his heart, and the one with which we are concerned, was the Boston Medical Library as the support here and elsewhere of sound medical learning.

Dr. Oliver Holmes spoke of him as the untiring, imperturbable, tenacious, irrepressible, all-subduing agitator, who gave no sleep to his eyes, no slumber to his eyelids, until he had gained his ends, who neither rested nor let others rest until the success of his project was assured.

Dr. Osler felt that: To few is given the tenacity of will which enables a man to pursue a cherished purpose through more than a quarter of a century — *Ohne Hast, aber ohne Rast* (his favorite quotation); to fewer still is the fruition granted. Too often the reaper is not the sower. It was not so with him.

Dr. J. S. Billings was led "by a sense of what is just and right" to say: "While the Boston Medical Library has been his special pet, for which no trouble was too great to take, and no sacrifice too great to make, all other medical libraries in this country are more or less indebted for their progress and prosperity to your librarian, Dr. James R. Chadwick."

All this was praise which he richly merited and which he would like to have in continued association with his name. We, his fellow-workers, knowing it was true, take up the garlands which were so recently offered to the living and twine them, still fresh, around the memory of the dead.

Dr. Chadwick began his own address at the dedication of our present home by reminding us that on a sun-dial at Oxford University are these words: *Horæ periunt et imputantur*, —the hours perish and are to be accounted for. His hours have passed, and the accounting is to be found in his labors for this and other libraries; in his work for the American Gynecological Society; for the cause of cremation; in a busy professional life; in his many unrecorded acts of generous helpfulness and kindness; in the sixty or seventy titles of published papers, essays and addresses; and in many minor fields of less continuous activities. This is no mean record. His contemporaries knew him well, and their descendants will not forget him.

To the members of his family we offer our most sincere sympathy in the loss which they have met with.

Miscellany.

INTESTINAL PERFORATION IN TYPHOID FEVER IN EARLY LIFE.

The supposed rarity and the difficulty in recognition of typhoidal perforation in children receives consideration from Dr. J. P. Crozier Griffith in a paper,[1] read before the Association of American Physicians at its last meeting, in which he reports six instances of perforation in children which came under his own observation.

Some of these cases illustrate the occasional difficulty in diagnosis, and others show that, although the characteristic intestinal lesions are apt to be less severe in the young, severe ulcerations leading to serious consequences do occur.

[1] American Journal Med. Sciences, October, 1905.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, OCT. 7, 1905.

CITIES.	Population.*	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diphtheria and croup.	Typhoid Fever.	Cerebro-spinal Meningitis.
New York . .	3,908,644	1,214	422	29.15	10.21	1.56	1.15	1.15
Chicago . . .	1,990,750	472	136	29.24	9.75	1.69	1.27	—
Philadelphia	1,407,968	404	136	29.70	4.95	2.22	3.96	.25
St. Louis . .	633,606	—	—	—	—	—	—	—
Baltimore . .	542,229	184	73	27.17	8.15	1.63	3.26	.54
Cleveland . .	444,251	—	—	—	—	—	—	—
Buffalo . . .	400,645	—	—	—	—	—	—	—
Pittsburg . .	362,403	94	34	35.11	2.12	4.25	8.51	1.06
Cincinnati . .	338,277	—	—	—	—	—	—	—
Milwaukee . .	325,990	—	—	—	—	—	—	—
Washington .	300,776	—	—	—	—	—	—	—
Providence .	196,744	40	12	25.00	7.50	2.50	—	—
Boston . . .	593,598	196	65	24.48	10.20	.51	2.50	2.00
Worcester . .	127,963	35	15	11.43	20.00	—	—	—
Fall River . .	105,697	39	24	33.33	7.69	—	2.56	—
Cambridge .	97,426	31	10	22.58	6.45	—	3.23	—
Lowell . . .	94,845	45	21	15.56	11.11	2.22	—	2.22
Lynn	77,025	28	6	21.43	3.57	—	3.57	—
New Bedford	74,321	21	6	23.81	—	—	—	—
Springfield .	73,484	16	2	12.50	12.50	—	—	—
Lawrence . .	69,989	16	9	25.00	6.25	—	—	—
Somerville .	68,188	16	4	12.50	12.50	—	—	—
Holyoke . . .	49,124	10	5	40.00	10.00	—	—	—
Brockton . .	47,782	14	8	28.57	—	—	—	21.43
Malden . . .	37,990	8	3	—	12.50	—	—	—
Haverhill . .	37,818	11	2	18.18	9.09	—	—	—
Salem	37,586	13	5	23.08	15.38	15.38	—	—
Chelsea . . .	37,277	14	8	—	—	—	—	—
Newton . . .	36,694	9	1	11.11	—	—	11.11	—
Fitchburg . .	33,017	6	1	—	16.67	—	—	—
Taunton . .	30,952	11	8	36.36	9.09	—	—	—
Everett . . .	29,108	8	2	25.00	—	—	—	—
Quincy . . .	28,067	7	1	14.29	14.29	—	—	—
Waltham . .	26,239	5	1	60.00	—	—	40.00	—
Gloucester .	26,006	—	—	—	—	—	—	—
Pittsfield . .	25,000	7	2	28.57	—	—	—	—
Brookline . .	23,424	—	—	—	—	—	—	—
North Adams	22,125	3	1	33.33	—	—	—	—
Chicopee . .	20,187	6	1	33.33	16.67	16.67	—	—
Northampton	19,942	5	2	—	—	—	—	—
Medford . . .	19,638	10	3	—	20.00	—	—	—
Beverly . . .	15,222	7	1	28.57	—	14.29	—	—
Newburyport	14,678	4	1	25.00	—	—	—	—
Hyde Park .	14,492	5	0	—	—	—	—	—
Woburn . . .	14,401	0	—	—	—	—	—	—
Melrose . . .	14,294	3	1	—	—	—	—	—
Leominster .	14,290	—	—	—	—	—	—	—
Marlboro . .	14,072	2	1	50.00	50.00	—	50.00	—
Westfield . .	13,609	2	1	—	—	—	—	—
Clinton . . .	13,105	3	0	—	—	—	—	—
Peabody . .	13,097	—	—	—	—	—	—	—
Attleboro . .	12,792	—	—	—	—	—	—	—
Revere . . .	12,647	—	—	—	—	—	—	—
Adams . . .	12,482	—	—	—	—	—	—	—
Milford . . .	12,105	—	—	—	—	—	—	—
Gardner . . .	11,981	2	1	50.00	—	—	—	—
Weymouth . .	11,585	3	1	—	—	—	—	—
Framingham	11,549	—	—	—	—	—	—	—
Watertown .	11,202	4	1	75.00	—	25.00	—	—
Plymouth . .	11,118	—	—	—	—	—	—	—
Southbridge	10,947	1	1	100.00	—	—	—	—
Wakefield . .	—	—	—	—	—	—	—	—

* As last reported.

Deaths reported, 3,034; under five years of age, 1,036; principal infectious diseases (smallpox, measles, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 841; acute lung diseases 265, consumption 351, scarlet fever 11, whooping cough 14, cerebrospinal meningitis 25, smallpox 0, erysipelas 2, puerperal fever 3, measles 5, typhoid fever 62, diarrheal diseases 316, diphtheria and croup 51.

From whooping cough, New York 1, Chicago 1, Philadelphia 7, Baltimore 2, Boston, New Bedford and Taunton, 1 each. From scarlet fever, New York 1, Chicago 2, Philadelphia 3, Pittsburg 5. From cerebrospinal meningitis, New York 14, Philadelphia, Baltimore and Pittsburg 1 each, Boston 4, Lowell 1, Brockton 3. From measles, New York 2, Philadelphia, Baltimore and Pittsburg, 1 each. From erysipelas, Chicago and Philadelphia, 1 each. From typhoid fever, New York 14, Chicago 6, Philadelphia 16, Baltimore 6, Pittsburg 8, Boston 5, Waltham 2, Fall River, Cambridge, Lynn, Newton and Marlborough, 1 each.

In the seventy-six great towns of England and Wales, with an estimated population of 15,609,377, for the week ending Sept. 30, 1905, the death-rate was 14.0. Deaths reported 4,182; acute diseases of the respiratory organs (London) 64, whooping cough 61, diphtheria 46, measles 30, smallpox 0, scarlet fever 48.

The death-rate ranged from 6.3 in Bournemouth to 25.3, in Tynemouth; London 13.9, West Ham 10.1, Brighton 13.6, Southampton 9.1, Plymouth 18.4, Bristol 11.6, Birmingham 14.5, Leicester 12.1, Nottingham 13.5, Birkenhead 9.9, Liverpool 15.9, Wigan 16.9, Bolton 17.9, Manchester 18.3, Salford 16.0, Halifax 11.1, Bradford 14.7, Leeds 12.3, Hull 15.8, Sheffield 15.6, Newcastle-on-Tyne 17.2, Cardiff 13.9, Rhondda 10.8, Merthyr Tydfil 17.7, Handsworth 12.7, Burnley 11.8.

METEOROLOGICAL RECORD.

For the week ending Oct. 7, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

DATE	Barometer.	Thermometer.			Relative humidity.			Direction of wind.		Velocity of wind.		Weather*		Rainfall in inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A.M.	8.00 P.M.	Daily mean.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	
S. . 1	30.16	58	60	55	91	89	88	N E	S E	4	8	O.	C	0
M. . 2	30.12	60	65	55	94	87	91	S W	S W	6	12	O.	O.	0
T. . 3	29.92	65	74	56	95	60	78	W	W	7	8	O.	C.	.05
W. . 4	29.82	66	77	55	62	50	56	W	W	10	7	F.	O.	0
T. . 5	29.80	68	80	57	58	38	48	S W	N W	12	12	C.	C.	0
F. . 6	30.20	52	58	45	51	49	50	N	N	15	8	C.	C.	0
S. . 7	30.32	50	59	41	66	61	64	N W	S W	6	11	C.	C.	0
☞	30.05		68	52			68							.05

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Means for the week.

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING OCTOBER 14, 1905.

H. SHAW, assistant surgeon. Detached from the naval recruiting rendezvous, Boston, Mass., and ordered to the naval hospital, Chelsea, Mass.

A. W. DUNBAR, surgeon. Ordered to the naval hospital, Mare Island, Cal.

J. M. BRISTER, passed assistant surgeon. Ordered to the "Philadelphia" and to additional duty at the navy yard, Puget Sound, Wash.

F. G. PARKER, passed assistant surgeon. Detached from the naval station, Tutuila, Samoa, and additional duty on the "Adams," and ordered to the "Pensacola," and to additional duty at the naval training station, San Francisco, Cal.

A. M. FAUNTLEROY, passed assistant surgeon. Detached from the "Philadelphia," and from additional duty at the Navy Yard, Puget Sound, Wash., and ordered to the naval station, Tutuila, Samoa, and to additional duty on the "Adams," sailing from San Francisco, Cal., Nov. 2.

RECENT DEATH.

DR. JOSEPH B. JONES, who was prominent for many years in Brooklyn, N. Y., died on Oct. 12. He was born in New York City in 1828, and was graduated from the College of Physicians and Surgeons, New York, in 1855. Dr. Jones had been connected with the Brooklyn City Dispensary since its organization. At one time he was Health Commissioner of Brooklyn, and for two years he served as Coroner of Kings County.

BOOKS AND PAMPHLETS RECEIVED.

Abdominal Operations. By B. G. A. Moynihan, M.S. (London), F.R.C.S. Illustrated. Philadelphia and London: W. B. Saunders & Co. 1905.

Index-Catalogue of the Library of the Surgeon-General's Office, United States Army. Second Series, Vol. X. Washington. 1905.

Exercises in Practical Physiology. By Augustus D. Waller, M.D., F.R.S. Part II. Exercises and Demonstrations in Chemical and Physical Physiology. By Augustus D. Waller and W. Legge Symes. London, New York and Bombay: Longmans, Green & Co. 1905.

Dionin (Ethyl-Morphine Hydrochlorate) in Ocular Therapeutics. By Leartus Connor, A.M., M.D. Reprint.

Is Keratitis Ever Caused by Rheumatism? By Leartus Connor, A.B., M.D. Reprint.

Original Articles.

THE ORGANIZATION OF A DEPARTMENT OF CLINICAL MEDICINE.

BY RICHARD C. CABOT, M.D., BOSTON,
AND
EDWIN A. LOCKE, M.D., BOSTON.

Last summer one of us (Cabot) was discussing medical education with Prof. A. E. Taylor of the University of California, a man who has acquired a wide knowledge of the actual methods and qualities of instruction given in the medical schools of this country as well as of the curious legends on the subject printed in medical school catalogues. The net result of his researches, he said, was this: The value of the instruction received by the students in American medical schools depends mainly on two factors:

(*a*) The personality of the teachers and

(*b*) The quantity of clinical material available.

Our own experience in watching the teaching at Johns Hopkins, University of Pennsylvania, Cornell, Chicago University (Rush) and University of California, as well as at Harvard, altogether confirm Professor Taylor's view: Men and material are the essentials; method is subordinate.

But given good teachers and abundant material for teaching, the benefits acquired by the student can be enormously increased by good methods of instruction or diminished by poor ones. During the past ten years at Harvard with essentially the same teachers and the same material we have added appreciably to the acquirement of our students, by the gradual development of a better system of instruction.

Yet our system is still very unsystematic and it seems to us worth while, therefore, to discuss still further the well-worn question of the methods of medical education. We shall confine ourselves to a series of suggestions on the organization of one department — medicine — but if we are right in what we propose for that department, the suggestions will, doubtless, be more or less valid for surgery and other branches, possibly for other departments of university teaching.

Part I.

Beginning with dogmatic statements we shall later try to support some of them by argument and explanation.

There are in our opinion four chief methods of teaching medicine and they should come in the following order:

1. Tell the student what he is to do. (Didactic or introductory lectures.)

2. Let him watch you do it. (Amphitheatre "clinics.")

3. Let him practice it under your direction. (Section teaching.)

4. Give him the opportunity to be of use by doing it himself under general supervision. (Ward work and out-patient work.)

Each of these four processes is to be further subdivided with reference to the three main branches of every subject that is worth teaching, viz., observation, record and reasoning.

1. The student must be told how to observe, how to record his facts, how to reason with medical data.

2. He must watch his teacher in the act of studying cases, recording data and working up those data by reasoning.[1]

3. He must himself practice examining patients, keeping records and reasoning from them under close supervision in small sections — clinics or quizzes.

4. Finally, he must be set to work quasi-independently to be of use as a physician himself, first in the study and care of patients in the wards and dispensaries; second, in the investigation of disease by the collection of cases, reading and experimentation, the whole to be put together as a graduation thesis.

1. Didactic or Introductory Talks.

The introductory lectures should be given not in a group by themselves covering a short period or by a single teacher, but by each teacher and scattered throughout the year at critical points in the student's course, *i. e.*, whenever a new subject or part of a subject or a new technical method is taken up. In such lectures some one familiar with the work of the whole school should first explain the place of the study of medicine among the other studies of the student's course, the amount and kind of work to be devoted to it, the correlation and dovetailing of the subjects taught by the different instructors in medicine, in short, the ground-plan of the whole course. This seems to us the real field of the didactic lecture. It can neither be demonstrated to the student nor practiced by him. It must be explained to him; hence the lecture followed by questions from the students seems the ideal way of giving that bird's-eye view of the whole subject which is most desirable at the beginning of any new stage of ones' work.

2. Demonstration to Large Classes.

To watch another at work is surely a valuable second step in any part of education. It gives us to be sure only a vague idea of the task, but still an idea which is less general and sketchy than that produced by verbal explanations alone. There are many portions of medicine which can be demonstrated as well to large classes (50 to 100) as to small sections. For example, the manner of the straightforward yet tactful and kindly physician in questioning his patient or listening to complaints can be watched by a large class almost or quite as well (if the teacher has a good voice and good room) as by a small one. The motions of percussion, the keeping of records, the sifting out of important data and their orderly and precise description can be demonstrated with a blackboard or by dictation to a large group. It is, we think, very important that the large amphitheatre exercise should be used in part

[1] See President Eliot's remarks on Medical Education. Boston Medical and Surgical Journal, 1900, cxiii. p. 557.

for this purpose. The student who tries to learn record keeping wholly by practice and without any previous acquaintance with good models, seldom learns the art unless he gets a hospital interneship and finds his models in the older internes and in the resident or visiting physicians. What one can learn from a good model can never take the place of practice, but it makes practice far more efficient.

Large "amphitheatre clinics" should, therefore, be used (*a*) for demonstrating technique, (*b*) for exemplifying good record keeping and also, we think, (*c*) for teaching the process of reasoning from records assumed to be correct, — the so-called "case method" of teaching. We have found this method effective with classes of over one hundred students, provided always that the instructor knows each student by name. We shall return to this point later.

3. PRACTICE UNDER CLOSE SUPERVISION.

If the oversight is to be close and intelligent the class must, of course, be divided for this work into small groups, — never more and usually less than ten to each instructor.

(*a*) Practice in inspection, palpation, percussion, auscultation, the use of the microscope in the study of blood, urine and sputum and the chemical tests used in the analysis of urine and stomach contents, — all this is valuable to the beginner only if he is closely supervised and can turn frequently to his teacher for advice and explanation.

(*b*) Practice in record keeping is likewise appropriate to the small "section clinic" because it is impossible for one instructor to watch and criticise the work of many in a task of this kind.

(*c*) Practice in reasoning out a diagnosis with the help of an instructor is an essential intermediary step between watching the teacher's reasoning process and reasoning for oneself, unaided. How to group symptoms into diseases, how to explain and interpret signs and symptoms, how to value rightly what is important and to discard what is "accidental" in a case, — such a process cannot be learned by observation or by reading. To make one's trials and exploit one's mistakes profitably one needs an instructor at one's elbow, *i. e.*, one needs "quizzing."

4. INDEPENDENT WORK WITH PATIENTS UNDER GENERAL SUPERVISION.

This part of the student's education needs little description. It may be carried out in the wards of a hospital (as "clinical clerk or interne"), in a hospital dispensary (as assistant), or in the homes of the poor (as is done in the Obstetrical Department at Harvard).

The essentials of this grade of education are:

(*a*) That the supervision should be able and conscientious; (*b*) that the student should have definite but progressive series of *duties* (*not mere opportunities*) and so feel himself really of use. If the supervising physician fails to supervise or is incompetent to do so, and thus makes the student an excuse for shirking his work, the student gets comparatively little good from his service. Too often the out-patient department becomes for the voluntary assistant a place where he learns methods of carelessness rather than of exactness, simply because of the lack of proper supervision and proper requirements of accuracy.

Or if the student does not feel that he is "on duty," — genuinely responsible for certain portions of the work, he does not put sufficient energy and interest into the performance of his duties to get the best out of it. In a hospital ward, for example, if the visiting physician makes the examinations, dictates the records and gives the orders, the student will be listless or mechanically subservient. Important duties must be definitely assigned to him, so that without him the hospital machinery will not run. To feel oneself of genuine use is one of the most powerful incentives at this stage of the student's development and greatly enhances the quality of his work. Duties, not mere opportunities, are what the advanced undergraduate usually needs to round out and solidify his education.

DISTRIBUTION OF THE DIFFERENT TYPES OF WORK IN THE SECOND, THIRD AND FOURTH YEARS.

TABLE I.

Methods of Teaching.	2d year.	3d year.	4th year.
I. *Introductory Lectures* (whole class)	1%		
II. *Amphitheater Clinics or Demonstrations* (whole class)			
1. Primarily on OBSERVATION — diagnosis	30%		
2. " " RECORD — history-taking		10%	
3. " " REASONING. *a* Case-teaching		20%	
b Quizzing			
4. " " PROGNOSIS: the TOTAL COURSE OF DISEASE			
a Clinico-pathological exercises		10%	
b Ward visits (acute and chronic cases)		10%	
5. Primarily on TREATMENT			
a Case-teaching		10%	
b Medical-surgical consultations		10%	
c Advice to patients given on detail before the class			5%
III. SECTION-TEACHING			
1. SECTION CLINICS			
a Physical diagnosis including laboratory work	60%	20%	
b History-taking			
c Treatment (advice to patients and prescription writing)			20%
2. SECTION QUIZZES			
a On single symptoms and their grouping		10%	
b On reading bibliography and the methods of looking up a subject			5%
IV. INDEPENDENT WORK			
1. Ward work			30%
2. Out-patient work			30%
3. Thesis			10%

We shall not attempt here to discuss how much of the student's time should be given to medicine, how much to surgery, to neurology, etc. Calling one hundred the amount of time allotted to *medicine* in each of the last three years of his course, we shall try to state what percentage of that time should be taken up by each type of work.

In a general way the student should become

each year more independent of the teacher. During his second year the student should do more watching, in the third more practicing under close supervision and in the fourth more independent work. But as it seems advisable to emphasize diagnosis at the beginning, postponing the drill on treatment until the latter part of the course, the fourth-year student must do some elementary work in treatment, — some watching and some closely supervised practicing besides his more independent work in diagnosis.

The third-year student needs to be well drilled in systematic methods of recording and reasoning and this can be done in large classes. Hence in the schedule here proposed the third-year man has 70% of his work in large classes and the second-year man only 40%, the rest of his time being given to diagnosis work in small sections.

In defence of the arrangement proposed we offer the following considerations: Learning medicine is not fundamentally different from learning anything else. If one had one hundred hours in which to learn to ride a horse or to speak in public, one might profitably spend perhaps an hour (in divided doses) in being told how to do it, four hours in watching a teacher do it and the remaining ninety-five hours in practice, at first with close supervision, later under general over-sight.

The case is not very different, we believe, in medical education. For about 1% of his time (a very important 1% but scattered through the medical course) the student should be talked to about whatever new piece of work he is next to attack. For about 25% of his time he should watch his teacher who should be a good model in the process of observation, record and reasoning as applied to medicine. But the great bulk of his time — at least 75%, we think — should be spent in practicing the difficult processes which he has to get at his fingers (and his tongue's) end. Practice in examining patients and their body fluids; practice in recording judiciously, accurately and over prolonged periods what he finds; practice in differential diagnosis, *i. e.*, in reasoning on data assumed to be correct and exhaustive; practice in talking to patients and their friends, in gaining their confidence, in getting news of their sub-conscious as well as their conscious life; practice in getting control of those who are incapable of self control; practice in all the technical processes (surgical, pharmacological and psychological) which are of value in the treatment of disease; this is what the student chiefly needs and it is in the supervision of this practice that the bulk of the teacher's work should consist. Most of the time the student should do the work while the teacher watches and criticises. In the amphitheatre clinics and lectures, the reverse is true. The teacher does the work while the student watches and criticises. This is valuable if kept down to 25% of time spent in medicine. But when it rises to 50% or 75%, as it does in some schools, the teacher who does the work, learns a great deal; the student who looks and listens learns very little after the first few exercises.

In the second year, a few lectures, a good many chances to watch a model teacher at work (amphitheater clinics like those given by Dr. Shattuck at Harvard) and a still larger opportunity to practice physical diagnosis under close supervision ("section-clinics").

In the third year for about a third of his time the student should watch the teacher keep records and reason out diagnoses (in amphitheater clinics such as are given by Dr. R. H. Fitz of Harvard). Another third of the student's time should be spent in section work and section quizzes. In the remaining 40% of his time case teaching, clinico-pathological exercises, ward visits and medical-surgical consultations are in order.

In the fourth year the bulk of the student's time should be spent in out-patient and ward work and in exercises where the treatment is emphasized.

Part II.

We desire next briefly to describe certain changes in the method of teaching medicine which seem to us to be under way. We shall refer to:

1. The wider use of pictures.
2. Clinical-pathological exercises. [See 4 (*a*) in Table I.]
3. Medical-surgical consultations.
4. Section teaching in treatment.
5. Section teaching on looking up a subject in literature.
6. A wider use of medical literature together with a moderate amount of time devoted to the history of medicine.
7. A more personal and intimate relation between the teacher and each student.
8. Supervision of medical teaching.
9. The wider use of practical examinations.
10. A further substitution of practical for the didactic work.

1. The use of pictures.

We have never seen a firstrate collection of pictures illustrating such parts of clincial medicine as can be graphically represented. In our own teaching of diseases of the chest we have used the instantaneous radiographs of the Ziemssen Rieder Atlas and the fine photographs of Curschman's collection, all passe-partouted and hung about the walls of a room. Colored photographs of skin diseases and of conditions like argyria, jaundice, methemoglobinemia, pernicious anemia, the facies of various diseases, microphotographs of blood, sputa, urinary sediment, intestinal parasites and their ova, — these and many more can be extracted from text-books or made from specimens or patients and used to supplement the demonstration of patients. The student who has seen a good picture of tetany, paralysis agitans, an astiro-autumnal crescent or a lead line will be able to recognize a case at once as we have proved in our own teaching.

The introduction of the reflectoscope greatly enlarges the possibilities of the use of pictures in

teaching medicine. With this apparatus any picture in a book or atlas, if not larger than 5 by 8 inches, can be thrown directly upon the screen, colors as well as forms being reflected and thrown up. Small pathological specimens can be shown beautifully to a room full of people at once. Even microscopic specimens can be projected without previously microphotographing them. The instrument is a great addition to our resources.

Dr. W. B. Chase, of Brookline, has recently demonstrated that we have in the "biograph" a valuable aid to medical teaching. His moving pictures of epileptic convulsions, nystagmus and of the various gaits and spasms are wonderful and will furnish opportunities for instruction never before enjoyed by most students.

2. CLINICAL-PATHOLOGICAL EXERCISES. [Table I, 4 (*a*).]

Last two hours at least and are given conjointly by a clinician and a pathologist. The material from recent autopsies is saved up and demonstrated at regular intervals, the demonstration being preceded by a reading (by the clinician) of the essentials of the clinical record together with such diagnoses as were actually made during life. The signs and symptoms are then interpreted in the light of these post mortem findings. After demonstration of the specimens, gross and microscopic, and the reading of the autopsy record, the clinical record is reviewed in order to see whether any better diagnosis could have been made had the available ante-mortem data been better collected or better reasoned out.

3. MEDICAL-SURGICAL CONSULTATIONS. [5 (*b*) Table I.]

In a considerable group of cases the diagnosis and treatment are of both surgical and medical interest and here it is of importance to the student to have an exercise conducted by a surgeon and an internist. These exercises are best conducted in sections, all the students examining the patient and reasoning to the proper diagnosis and course of treatment under the direction of the two instructors. Later the results of operation and the post-operative treatment should be followed.

4. SECTION TEACHING IN TREATMENT. (Fourth-year work.)

Besides prescription writing the student should be given practice in explaining clearly and convincingly to patients of both sexes, of various ages and various social conditions, the steps necessary for the recovery of their health. There should be exercises on how to lay out a course of life for a phthisical patient, a diabetic, a neurasthenic woman, an overworked business man, an alcoholic laborer, a debilitated child. The student has previously listened to his teacher as he has gone over the same ground and has noted the variations from the type according to the individuality of the patient. He must now practice his tongue and his brain in doing this piece of service for himself with criticism by the instructor. In short, the advice should be as exactly as possible like that necessary in private practice.

5. ON READING BIBLIOGRAPHY AND THE METHODS OF LOOKING UP A SUBJECT.

The class should visit a medical library in divisions and there be shown the standard journals, German, French, English and American, the peculiarities of their indexing method as well as the methods of using the Surgeon General's Catalogue and Index Medicus. Further, the information to be gained from yearly compilations like Gould's Handbook or Progressive Medicine and from the standard monographs and text-books can be indicated. There is a definite course of procedure in looking up a subject which can and should be reduced to a standard technique and taught to every student.

6. THE USE OF MEDICAL LITERATURE.

Throughout the course frequent reference should be made to the classics of each subject, and the members of the class should be required so far as practicable to consult them. In this way each disease or subject becomes associated in the student's mind with the best article in that peculiar line. The value of this method lies in the broader point of view which it gives the individual and the experience in reviewing medical literature which it furnishes. The best methods of keeping notes and abstracts of articles read need to be illustrated to the beginner. A moderate amount of time may also be profitably spent in the study of the history of medicine.

The student cannot too early learn that medicine is not an exact science; that the accepted fact of to-day may be proved an error to-morrow; that his teacher and his chosen text-book cannot be followed implicitly; that he must search out the truth for himself.

7. THE NEED OF MORE INTIMATE PERSONAL KNOWLEDGE OF EACH STUDENT BY EACH TEACHER.

As the method of teaching medicine by lectures becomes less popular in our medical schools, as the teacher meets the students in smaller sections and gives him a larger share of work to do for himself, the relations of the teacher and student become less formal and more democratic. We no longer see a great man preaching from the floor of the amphitheater to a crowd of humble and awestruck nobodies. It becomes increasingly clear that the teacher needs to keep track of what each student knows and does not know all through the year, and not merely after the blue books are passed in, if he is to do his best service to the student.

Most medical teachers do not even know the names of their students, far less the strong or the weak points of each. But there are some types of medical instruction in which it is absolutely essential for him to know his pupils by name, as, for example, in case teaching with large classes. The students will answer if you call on them by

name; not otherwise. Of course, it is little enough to know merely the name of each student, but this bit of information acts as a nucleus round which further knowledge can and does gather.

8. SUPERVISION AND CORRELATION OF WORK.

Medical teaching like most university teaching is greatly in need of supervision and criticism. All teaching up to and through the high school is properly visited, supervised and criticised. In collegiate and postgraduate work there is in most universities no adequate system of supervision, and medical schools have to bear their part in this great evil. Should an intelligent visitor come to the Harvard Medical School, study the methods of teaching medicine and visit the classes tystematically for a week or two, he would know more of what was being done, well or ill, than any living man knows to-day. To-day no one's work is inspected, praised or corrected. Only by inquiring of students is any idea gained of what the teachers are doing, whether they do it well or ill, and whether their courses duplicate or overlap.

We do not suppose the medical school is any worse off in this respect than any other department of the university. The visiting committees appointed by the overseers do very little in most departments and are not intended, we suppose, to visit and criticise teachers.

In our opinion the head of each department should regularly visit and criticise the teaching of each of his subordinates and by frequent conferences make sure that their work does not overlap.

9. EXAMINATIONS.

Examinations should be a practical test of the students' power to diagnose and treat disease, in short to practice medicine, not his power to write or talk about medicine. Some men who have never learned the art of writing examinations make the best practitioners. The powers of such men would be shown in their true light if the examination consisted of the examination, diagnosis and treatment of cases. On the other hand those glib students who can write and talk fluently about disease but cannot hear, see or feel the signs of disease, nor sensibly advise a patient, would also be fairly tested as at present they are not.

The highest purpose of the examination is, we believe, to indicate to him who has in charge the instruction of the student, his acquirements and needs.

Practical examinations such as we have recommended are given in some English schools. They consume much time but it is time well spent.

10. SUBSTITUTION OF PRACTICAL FOR DIDACTIC WORK. (See Table II.)

In the above discussion we have attempted to emphasize the importance throughout the medical course of the predominance of the practical work by the student. During the past ten years the greatest reforms in the methods of medical instruction have taken place along these lines, yet even greater changes of this nature are necessary. We seek to have the student learn by experience; to prove things for himself; to enter practice with an actual knowledge of medicine based upon what he has himself done. In the past the graduate has been left to acquire from his hospital service or in actual practice much of what is possible for him to gain from his undergraduate work if that were properly arranged.

In Table II the arrangement of time which we propose is contrasted with the schedule now in force (1904–5) at the Harvard Medical School.

TABLE II.

	Harvard Medical School.	Proposed Schedule.
Lectures	64 hours or 8%	7 hours or 1%
Exercises for whole class (Clinics and quizzes) [1] Clinical conference	496 " " 69%	182 " " 24%
Section work (Clinics and quizzes) *Independent work*	72 " " 9%	277 " " 35%
a Wards	0	141 | 20% | =40%
b Dispensaries	108 " " 14%	141 | 20% |

SUMMARY AND CONCLUSIONS.

The points we wish especially to emphasize are:

1. The need of greater diversity in the methods of teaching; a diversity corresponding both to the different aspects of the study and to the different stages of the students' development.
2. The need of more drill in the proper keeping of records.
3. The need of a broader training in the use of literature.
4. More section work.
5. The wider use of pictures in teaching.
6. An increase in the amount of independent work.
7. An adequate supervision, correlation and criticism of the teaching.
8. Examinations on the ability to practice medicine rather than to write or talk it.

A REVIEW OF THE END RESULTS IN CASES OF EXOPHTHALMIC GOITRE TREATED SURGICALLY.

BY THOMAS W. HUNTINGTON, M.D., SAN FRANCISCO.

DURING the past three years I have treated surgically nine patients suffering from exophthalmic goitre. In each instance partial oblation of one or both lobes of the thyroid was done and one patient was subjected to three operations successively, as will appear later. Seven were females, two were males.

The ages ranged from twenty-eight to fifty-six, the average age being forty-two years. In five patients the development of symptoms of Graves' disease was associated with pre-existing enlarge-

[1] Work spent on thesis omitted in both schedules.

ment of the thyroid; two of these were cystic-colloid. In four, the development of characteristic symptoms was simultaneous with glandular hypertrophy — all of these were colloid. In the five cases where the exophthalmic condition developed secondarily, pre-existing glandular hypertrophy was noted during a period of six, ten, thirty-four, thirty-five and thirteen years respectively. In this series exophthalmic symptoms had been noted one, two, three, two and two years prior to operation — average one and four-fifths years. Duration of symptoms in the primary or pure Basedow cases prior to operation was two years, three months, two months and one year; average seven and one-quarter months.

Bilateral thyroid hypertrophy was noted in every case. In two it was recorded as slight. In four it was clearly noticeable and in three the enlargement was exaggerated. The two cases of longest duration, thirty-four and thirty-five years, were of the cystic variety. Exophthalmos was manifest in eight patients. In four this symptom was recorded as slight, in two distressing, in two exaggerated, and in one absent. Tachycardia in varying degree was present in every case, and in four instances it was so manifest as to throw serious doubt upon the propriety of surgical interference.

Vascular disturbances, with associated symptoms such as pulsation of cervical veins; arterial hum in the carotids and branches; interference with the sympathetic system manifest in abnormal glandular activity; in profuse perspiration; hyperemia, local or general; alternate dryness and excessive moisture of the palms and soles; polyuria; digestive disturbances manifest in occasional attacks of diarrhea were present in nearly every case. Psychic disturbances and neuroses of a somewhat vague character, which may be described as temperamental changes, undue excitability, intolerance of noise, weeping without adequate cause, capricious appetite, and the development of strong dislike for friends and relatives, was noted in more than half the cases. Two of the cases had experienced frequent well-defined suicidal impulses.

Dyspnea of mechanical origin was uniformly present: slight in four and distressing in five cases. Deglutition was interfered with to a greater or less degree in seven cases. Muscular weakness, especially in the musculature of the thighs and back, was of frequent occurrence.

In the first case ether was employed as an anesthetic throughout the entire procedure. Its use was followed by symptoms so alarming that I determined to abandon it in subsequent undertakings. In the following three cases nerve trunk cocainization was employed satisfactorily. In the last five cases, Schleich's method was followed and found to be on the whole satisfactory. In very early cases, before extensive degenerative changes have occurred, it is probable that ether may be employed with reasonable assurance of safety; nevertheless, it cannot be too strongly urged that general anesthesia will markedly increase the death-rate if employed as a routine measure.

In this series, eight patients survived the operation and are now living. One patient died on the twelfth day. The eight living patients have been carefully watched and the status definitely recorded up to date, and as the number is small, I have deemed it proper to append a somewhat detailed account of each case as it occurred.

Although the first four cases were published in the *Annals of Surgery*, January, 1903, for purposes of this paper I thought it best to give a brief résumé of the condition leading up to treatment.

CASE I. A woman, domestic, twenty-eight years of age. Family history unimportant. Existence of thyroid disease extended over five or six years. Thyroid greatly enlarged. Patient complained of most of the classic symptoms; exophthalmos present to an exaggerated degree, heart conditions most distressing. Muscular weakness, especially in the erector spinæ and thigh muscles, very noticeable. Patient had abandoned work and was rapidly approaching helplessness.

Operation March 30, 1902. Right lobe removed. Patient made a quick recovery and improvement was satisfactory from the beginning. She gained weight rapidly. Blood and vascular conditions underwent a complete revolution and she resumed work at the end of three months.

Condition after three years and three months: Patient has worked steadily as a domestic for the past two and a half years. Exophthalmos has disappeared, pulse rate is normal and, in fact, all the symptoms are corrected and the patient is well.

CASE II. An unmarried woman, aged forty. Family history unimportant. Has noticed enlargement of the thyroid for one year with simultaneous advent of Basedow symptoms. Expression anxious; is anemic. Both lobes perceptibly enlarged, voice has undergone change, deglutition difficult, hacking cough, dyspnea, tremor and mental condition especially noticeable; slight exophthalmos. Temperamental changes marked.

Operation June 17, 1902. Left lobe removed. Patient made a quick recovery and there has been no recurrence of former symptoms.

At a recent interview she informed me that her health is ideal.

CASE III. Male, aged fifty-six. Family history unimportant. Has used alcohol freely. For ten years had noticed an enlargement of left lobe of thyroid. At first this gave little discomfort, but during the past two years it has increased rapidly in size and has been associated with Basedow symptoms. Left lobe fills the entire left side of neck from clavicle to inferior maxilla. There was marked exophthalmos; dyspnea had become a prominent symptom accompanied by a persistent cough and profuse expectoration, especially in the morning. Large bronchiectatic cavities were found in both lungs. Voice had undergone decided changes. Other classical symptoms of Basedow's disease were clearly in evidence. Patient's general condition was deplorable, and although he continued in charge of his business as a merchant, every effort occasioned great distress.

Operation July 14, 1902. Removal of left lobe. Operative wound healed quickly but relief of symptoms was somewhat delayed. Long pressure upon the trachea rendered dyspnea persistent and bronchial changes have never entirely cleared up. Gradually, however, he has attained a comfortable condition.

At the present time all his symptoms are greatly ameliorated and the classical Basedow symptoms are

entirely absent. The occasional attacks of coughing due to dilatation of the bronchi persist, otherwise his condition is satisfactory.

Case IV. Married woman, aged forty-two. Has always been a delicate person. For past seven or eight years has had an enlarged thyroid which gave no special symptoms until one year ago when typical Basedow symptoms were manifest. The patient is a fragile, anemic, thin person presenting all the typical signs of Basedow's disease. Exophthalmos very marked. Thyroid greatly enlarged bilaterally. Vascular, nervous and temperamental symptoms very noticeable. Patient has been obliged to earn her living as a seamstress but is unable to continue at her employment.

Three operations were done on this patient. The first was undertaken Aug. 5, 1902, at which time the right lobe was enucleated. Owing to the desperate condition of the patient, removal of the left lobe was deferred. About six weeks later two thirds of the left lobe were removed. Recovery from both operations was rapid, relief of symptoms slow but continuous. Patient resumed work as a seamstress at the end of three months, and continued to earn her living comfortably until March 14, 1905. The record at that time was as follows:

For the past two months patient has noticed a marked increase in the remaining portion of the left lobe and a recurrence of Basedow symptoms with general failure in health. At her own request I decided to remove the greater portion of the remaining thyroid structure. This was accomplished easily and there was an immediate improvement in every respect. Patient resumed work at the end of one month and at the present time, her condition, while not altogether satisfactory, is better than it has ever been since the first operation. Exophthalmos is still noticeable but the eyes are less prominent and this symptom is apparently disappearing gradually. She has gained weight, vascular and nervous conditions are fairly normal.

Case V. Married woman, aged fifty-three. For thirty-five years has had a large bilateral cystic goitre. For the past two years has developed classical symptoms of Basedow's disease. Exophthalmos very noticeable. Psychic conditions distressing. Muscular tremors, excessive thirst, and tachycardia manifest. Hair has fallen out to a marked degree. Marked dyspnea. Respiration 24 when at rest. Breathing stridulous.

Operation Oct. 29, 1902. Entire left and three quarters of right lobe removed. Prompt recovery from operation. Relief of symptoms was manifest very early. At the end of one year had resumed her former weight, having gained nearly fifty pounds.

At a recent interview, I found her condition entirely satisfactory. Exophthalmos has disappeared, respiration and pulse rate normal, entire absence of psychic symptoms.

Case VI. Married woman, thirty-two years of age. For twelve years has noticed bilateral thyroid enlargement. I saw her in November, 1903. At that time she had suffered for about eighteen months with exaggerated Basedow symptoms. Patient had deteriorated rapidly within the past few weeks. Exophthalmos not very marked. Pulse rate varied from 120 to 160. Patient was extremely nervous, cried most of the time and without provocation. Dyspnea very distressing. Heart greatly dilated. Entire loss of power of concentration, marked irritability. There was excessive thirst, frequent vomiting and great muscular weakness. Her condition was so grave that the propriety of an operation was seriously questioned. Feeling that she could not survive long in her then condition, I decided to undertake it.

On Nov. 20, 1903, I removed the entire left lobe which was very greatly enlarged and colloid in structure. Immediately following the operation she became uncontrollably nervous which was relieved by morphine. Recovery from operation was prompt as was the relief of her most distressing symptoms. Patient left the hospital at the end of six days in fairly good condition.

Since that time there has been noted gradual improvement. The patient is an artisan and pursues her calling without interruption. There has been no recurrence of former symptoms and in every sense her condition is satisfactory.

Case VII. Married woman, aged twenty-nine. Was always well until two years ago when she noticed bilateral enlargement of the thyroid. There was immediate association of Basedow symptoms. Extreme nervousness, tachycardia, vasomotor disturbances, tremors, muscular weakness, irritability.

Operated April 5, 1904. Whole of right lobe and three quarters of left removed. Symptoms during the subsequent forty-eight hours were such as to excite apprehension but prompt recovery followed.

June 1, 1904. Patient reported at office in excellent condition. All Basedow symptoms have disappeared. At that time she was on the point of leaving for South Africa where she resides at the present time. I again heard from her about six months ago to the end that her health remains satisfactory and there has been no recurrence of Basedow symptoms.

Case VIII. Male, aged fifty-one. Patient first seen in July, 1904. At that time the left lobe of the thyroid was perceptibly enlarged, causing slight difficulty in swallowing, and dyspnea. Although the patient's general health was excellent, he complained of nervousness, slight exophthalmos and muscular tremors.

On Aug. 28, 1904, I removed the left lobe of the thyroid. Wound repair was prompt and from the outset all symptoms were abated. At the present time patient is leading an active life and has no symptoms suggesting the Basedow condition.

Case IX. Married woman, aged forty-eight. Family history: Mother died at seventy, having been insane during the last three years of her life. (This fact I did not ascertain until after operation.) Patient had suffered for one year with persistent cough, rapid pulse and dyspnea. Some months ago there was noticed a bilateral enlargement of both lobes of the thyroid. Associated with this there was a slight exophthalmos. Patient became irritable and abnormally excitable. Polyuria was noted at times. Slight interference with deglutition. Patient is markedly attenuated, muscular weakness noticeable, condition generally bad. Five months ago right breast was removed for a benign tumor. Recently has been ill with an acute pulmonary affection.

On March 3, 1905, her general condition having improved, I removed the greater part of both lobes of the thyroid. Patient left the operating table in good condition and did well for the succeeding six days during which time the wound healed *per primam*. Then there was a sudden change for the worse. She became extremely restless and totally irrational. Later she became comatose and died at the end of the twelfth day.

While the fatal ending in this case must inevitably be attributed to thyroid intoxication, the advent of acute mania which was noted on and after the sixth day suggests strongly that heredity may have played an important rôle in closing scene.

Analysis of the histories of the eight living patients, from the standpoint of end results, has developed the following facts:

Exophthalmos was present in seven cases. At the present time it is absent in four, and notably lessened in three. The average duration of the disease prior to operation in the first series was eleven months, in the second twenty-eight months. Hence it may be inferred that permanent deformity from this cause may be expected in long-standing cases. Tachycardia disappeared after a few weeks in every case. The same statement may be made in reference to abnormal psychic manifestations, undue excitability and associated nervous phenomena. Recurrence of thyroid hypertrophy was noted in one case necessitating a third operation thirty months after the second. It may be that a more radical removal of the right lobe originally would have obviated the final procedure.

Re-establishment of normal structural conditions as manifest in muscle repair, increase in weight and strength, and resumption of normal blood conditions has been uniformly slow. While in each case progressive improvement in these respects has been noted, cases II and IV have been disabled to such an extent that they will never regain their wonted standard of health.

A wider experience in this particular field has increased my faith in the value of surgical interference in carefully selected cases; and in conclusion, I wish to repeat what I wrote in an earlier communication: "The argument for early operation in malignant disease applies here with equal force. Extirpation should be undertaken before destructive tissue changes have occurred, before the function of important organs has been seriously, perhaps permanently, impaired and the patient's vitality lowered by chronic thyroid intoxication."

NOTES ON THE USE OF THE ETHER IN MEDICINE. NOTE 202 — THE TREATMENT OF NEURASTHENIA BY INTERMOLECULAR BATHS OF POLARIZED ETHER.

BY WILLIAM ROLLINS, M.D., BOSTON.

IN Note 189, on the use of magnetized ether in therapeutics, a new therapeutic measure was explained. The patient was immersed in a bath of magnetized ether whose effects could be concentrated in different parts of the body by pieces of iron to which the name magnetodes was given. In the present note baths of magnetized ether are recommended in neurasthenia, a description of an apparatus being given to enable any physician through his local electrician, carpenter and tinsmith to construct it. The apparatus consists of a hollow magnet made in three sections for portability, each section weighing approximately 80 kilograms.

Fig. 1 shows the three sections placed together to make one magnet 180 centimeters long, within which slides a framework — C — Fig. 2, covered with a cushion on which the patient reclines. As the framework slides on rollers a patient can be easily pushed within or withdrawn from the magnet.

Each section of the magnet is constructed of two octagonal flanges of cross-glued wood fastened together by eight strips of wood, each 66 cm. long, 15 centimeters wide and 3 centimeters thick. These are numbered 1 to 8 in Fig. 1. Over the open bobbin thus made, double cotton covered copper wire, number fourteen, American standard, is wound in three layers, each layer containing two coils; each coil composed of 138 turns in one layer; therefore each coil is in width half the length of one section, and each layer of each section contains 276 turns. As there are three of these layers in each section the total number of turns in one section is 828. As the magnet contains three sections the total number of turns is 2,484. The following data are interesting as they make the presence of the ether very real, a matter of importance to us as physicians for we should employ the ether more extensively in therapeutics.

MEASURES OF THE ENTIRE MAGNET.

The resistance of the eighteen coils in parallel is 0.189 of an ohm.

At 101 volts, direct, the current is 534.39 amperes.

At 101 volts, 60 cycles, it is but 52.5 amperes, or less than one tenth.

MEASURES OF ONE SECTION.

The resistance of the six coils in parallel is 0.508 of an ohm.

At 106.5 volts, direct, the current is 209.64 amperes.

At 106.5 volts, 60 cycles, the current is only 22.5 amperes.

These data show what an important part the ether plays in the resistance of a wire coiled in a spiral or how small a part the ohmic resistance is. Aside from its use in therapeutics the magnet is interesting for the study of induction. Two inductive effects which are useful psychologically are mentioned. Some patients are skeptical of receiving any benefit from the apparatus because while within it they feel no unusual sensations. In such cases it is well to give the patient a bar of iron to hold in the hand for a moment, or an iron cap to put over the head. Though these are entirely free from the apparatus, the constant rapid vibration of the iron attracts attention. A more striking apparatus is a coil of wire whose ends are connected with the terminals of an incandescent electric lamp. When the patient, reclining at ease within the magnet, holds the coil in his hand and sees the light brightly glowing without being connected either with the magnet or the street current he realizes he is submerged in a powerful sea of force and is ready to believe what is told him about the therapeutic effect it may produce.

When a direct current is sent through the wire a patient reclining at ease within the magnet has the quiescent ether in his body polarized by the current and depolarized when it stops. Therefore by means of a suitable interrupter the ether in the tissues of a patient's body can be subjected to stresses of varying strength and

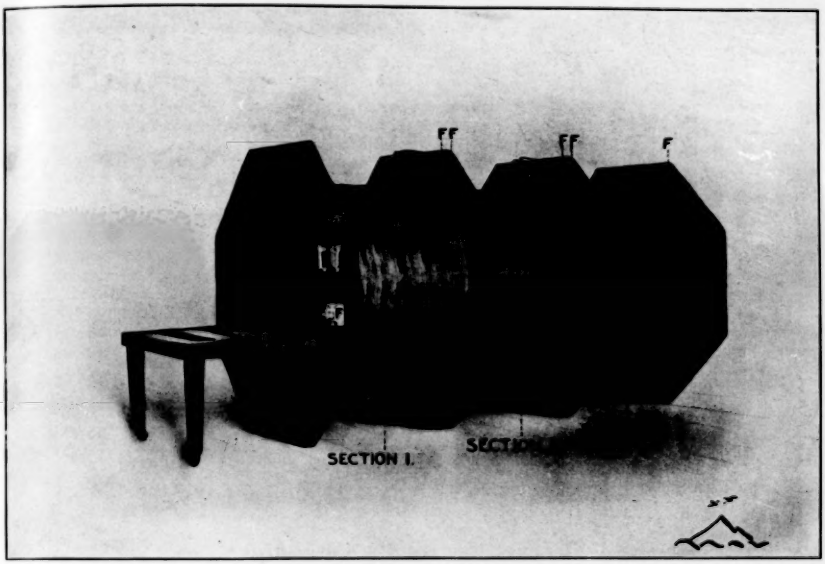


PLATE 1. — Magnet for Neurasthenia.

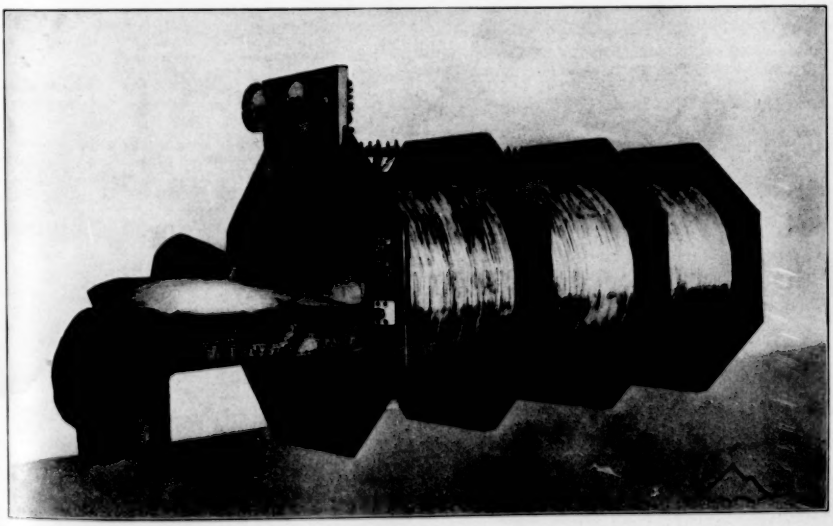


PLATE 2. — Magnet for Neurasthenia.

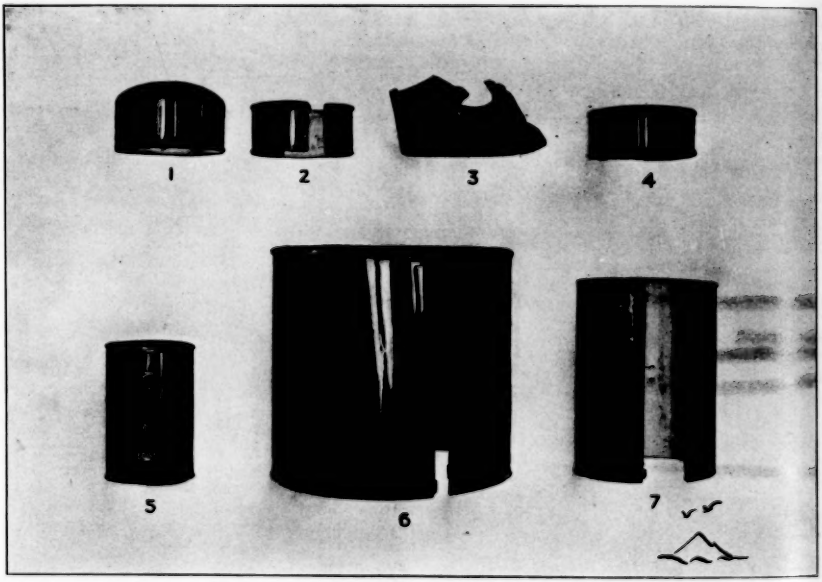


PLATE 3. — Magnetoles.

duration. When an alternating current is sent through the wire the ether in the patient's body is polarized and depolarized at the cycle rate of the current. These agitations of the ether of the particles of the body at the rate of one hundred and twenty a second with the ordinary street current may be made to vary in extent with the number of turns of wire and with the strength of the current. With a slower rate of alternation the current through the wire increases in amount and special dynamos will in the future enable physicians to vary the rate of polarization to produce the best results.

Within a long magnet such as is here illustrated, the number of chains of polarized ether units is practically the same in all cross sections except near the end, therefore the patient is immersed in a uniform bath, whose strength depends upon the current and the number of turns of wire and may be calculated by the formula, $I = 4\pi \frac{n}{l} \frac{c}{10}$.

In reporting cases, as we are too fond of doing, thereby increasing medical literature to an undesirable extent, the strength of the bath given by this formula should be stated. Local effects may be produced by exciting less than the whole number of coils and by the magnetodes described in Note 189. A few are shown in the figures accompanying the present note.

MERCURO-CATAPHORESIS IN DISEASES OF WOMEN, WITH REPORTS OF CASES.*

BY FRANCIS B. CARLETON, M.D., BOSTON.

While the treatment of many of the diseases of women by means of the electric current is by no means new, it is only within a comparatively few years that a method of treatment has been devised, which, while not infallible, for no method can be that, will be found absolutely curative in a large percentage of cases of the most common of the pelvic diseases and palliative in most of those which it does not cure. I refer to the mercuro-cataphoric or Massey, treatment, which, to the best of my knowledge, was first suggested by Dr. G. Betton Massey, of Philadelphia, to whom all credit should be given and much praise is due.

It has been said, and I am not prepared to dispute the statement, that something more than 90% of all adult women suffer at some period of their lives from some pelvic disorder. That is simply another way of stating that only 10 of each 100 women are normal. Whether or not these figures are correct, we all know that a very large proportion of women are not as they should be, and this fact seems to obtain regardless of social position or mode of living and it appears that women who have borne children are rather more prone than others to need the services of the gynecologist. The ordinary local treatment of these cases is, generally speaking, not satisfactory, and a little later I will try to explain why this is the case. I shall probably be criticised for stating as my opinion that many women are now subjected to operation, notably ovariotomy, when a more conservative method of treatment would not only save the ovaries but would leave the patient in far better condition than does such operation, even with the most favorable outcome. At the same time, no one realizes any more deeply than myself the immense value of surgical operation and the great debt which mankind, and particularly womankind, owes to surgery. My point is simply this: We should operate and advise operation only when it has been thoroughly demonstrated that such operation offers a better chance for the life and future health of the patient than any other procedure, and it seems to me that it is a physician's duty to familiarize himself with any method of treatment which offers his patient a fair prospect of cure without resorting to radical operation, and this is precisely what the electro-cataphoric method does.

As some of the members of this society may not be familiar with the therapeutic use of the electric current and the terms of nomenclature, I shall preface what I have to say by a very brief explanation of some of the terms used in electricity and of the action of the galvanic current, which is the one used in the Massey method.

A volt is the unit of electrical energy. It may be compared to the head or pressure of a column of water. The ampere is the unit of current strength and, roughly speaking, is analogous to the amount of water discharged from the outlet of a pipe, though this comparison is not literally a correct one. For medical use the unit is the milliampere or 1-1000 of an ampere.

The galvanic current is the direct current. The positive pole, usually designated by the + sign, is always positive, and the negative pole, designated by the — sign, is always negative. The positive pole is acid and tends to harden and contract tissues; the negative pole is alkaline and softens and relaxes tissues. The current flows from the positive to the negative pole consequently, and with few exceptions, solutions saturating the positive electrode will be carried towards the negative electrode, when the current is turned on. This is easily demonstrated by thrusting a copper needle, connected with the positive pole, into a hard-boiled egg, putting a negative needle into the egg at another point. After the current has been flowing for a while, on cutting into the egg a greenish discoloration will be found extending from the positive towards the negative pole. A more practical test consists in saturating the positive electrode with a solution of cocaine and applying both electrodes to some part of the body, as the arm. On turning on the current a local anesthesia is produced by the actual carrying into the tissues of the cocaine. The beauty of this method of producing local anesthesia lies in the fact that you need not fear the production of constitutional effects, which is so apt to be the case when cocaine is injected hypodermatically.

And now for the mercuro-cataphoric treatment

* Read before the Essex South District Medical Society, May 9, 1905.

itself: A very large abdominal electrode should be provided for the negative pole, the larger the better. The positive electrode is of copper or zinc, round or egg-shaped, with a long, insulated stem. It should be thoroughly coated with mercury and rendered aseptic before each treatment. The patient should take some antiseptic douche before coming for treatment and I have found results apparently more satisfactory if a salt water douche be taken within an hour or two of the application. The treatments are ordinarily intra-vaginal and if intra-uterine application be indicated the electrode must be of proper size and shape. In most cases the electrode may be placed in position either with or without the use of a speculum and its position in the vagina should correspond to the part to be treated. The current should be gradually turned on till the meter registers 25 or 30 milliamperes and I have rarely found as much as 75 milliamperes to be necessary. The sensations of the patient should, to a certain extent, guide you in determining the strength of the current and the length of the application, and it has been my custom to get the patient's gauge, so to speak, in the first few applications and then to decide on what strength of current and what length of treatment is best for that particular patient. It is a safe rule to say that the applications should vary from 25 to 75 milliamperes in strength and from two to six minutes in duration. The sensory nerves are affected in direct ratio to the voltage of the current, given a certain amperage. It is advisable then to use the lowest voltage possible to overcome the resistance of the body sufficiently to produce the requisite current strength. Manufacturers of apparatus have generally overlooked this point, their rheostats cutting down the current strength only; accordingly, Mr. W. C. Woodward, a prominent electrical engineer, and myself have devised a rather simple means of controlling the voltage which furnishes at the same time an absolutely safe way of utilizing the street or lighting current and effectually guards against shock to the patient should the current be suddenly increased or cut off altogether. This of course is applicable only to the direct and not to the alternating current.

In electrotherapeutics, exactly as in other branches of medicine, idiosynerasy is to be carefully taken into account. I do not know why a dose of morphine or arsenic which is harmless to one patient should produce symptoms of poisoning in another. I do not know why one patient should be able to take, comfortably, twice as strong a current as another, or, to put the matter in another way, why 25 milliamperes should produce a certain result in Mrs. A., when 50 milliamperes are required to bring about a similar result in Mrs. B. These are facts, however, and we should bear them in mind and regulate our treatments accordingly.

These treatments are never actually painful, and if carefully administered should hardly be productive of discomfort. There is rarely any sensation at the point of contact of the vaginal electrode. The sensation is at the abdominal electrode and the larger that is, and the better it be adapted to the surface of the body, the less the current is felt. In cases where the vaginal mucous membrane becomes eroded because of contact with the positive electrode, a few douches and treatment by a mild high-tension current will be all that is necessary. If, after treatment, the electrode seems to be stuck to the vaginal mucous membrane, a momentary reversal of the current will release it, this being because of the softening action of the negative pole.

Occasionally and rarely there will be a certain amount of prostration on the day following each of the first few treatments, but this needs no particular attention. Again, a leucorrhea may be produced or increased if present. This, however, will be merely a temporary affair and calls for nothing more than the usual antiseptic douche.

Now, for a moment, let us compare the above treatment with such local measures as are ordinarily used. The whole point, in a nut shell, is to make your application directly to the diseased part. This can be done only to a very limited extent by means of a non-electrical application, simply because the parts are not directly accessible and there is usually something between your applicator and the actual seat of disease. But at all events, the iodine, ichthyol, or whatever you use, remain about where they are put. I question their penetrating very deeply into the diseased tissues. On the contrary, in the Massey treatment, the oxychloride of mercury which is formed at the positive electrode, by electro-chemical action during the passage of the current, is carried and forced by that current directly into the diseased parts. You get, then, two distinct actions: First, the sedative, stimulating and tonic effect of the electric current, *per se*, and, second, the antiseptic and astringent action of the oxychloride of mercury which is actually forced into the tissues in its nascent state, and I know of no better antiseptic than this.

In addition to the cataphoric treatment it is advantageous to follow it by static and vibratory applications and I have been in the habit of so doing.

Let us consider a case of pelvic trouble; no particular case but just one of the common ones which so obstinately refuses to be cured by ordinary local treatment. We are considering the advisability of operation but decide to first try mercuric cataphoresis. The patient is in the peculiar nervous condition so characteristic of this class of cases. She takes the cataphoric treatment with a very good prospect of cure. But even if it doesn't cure her, and operation be finally resorted to, it helps her nervous condition, reduces pelvis congestion, tones up the vaginal mucous membrane, the muscle of the uterus and its ligaments, and last, but by no means least, it has probably entirely relieved her pain. In a word, she is far better able to withstand operation and has a much less protracted period of convalescence than she would have had had opera-

tion taken place without the electrical treatment.

My objection to surgery in these cases isn't because patients die as a result of it, for, as a matter of fact, they usually do not, and operations unquestionably cure many, many times. Often, however, the reflex nervous condition, that exists as a result of operation, is, if not dangerous to life, about as hard for the patient to bear as was the original disease for which the operation was undertaken. Removing a diseased ovary certainly precludes all possibility of future disease in that particular organ, but I think you will agree with me that it is vastly better, when possible, to leave that ovary where Nature put it and cure its disease there. The Massey treatment does just that and, in addition, it does not confine the patient to bed, is not painful, is comparatively inexpensive and absolutely devoid of danger, which points all appeal to the patient as well as to her medical attendant.

I trust the following reports of cases in which this treatment has been used will be of interest:

CASE I. Mrs. R. W. E., thirty-one. One child five years old. One miscarriage at four months, two years ago. Profuse menstruation. Uterus low and subinvoluted. Both ovaries tender and practically constant pain over ovarian region.

Treatments by mercuric-cataphoresis entirely relieved pain in three applications. Three treatments were given the first week and two each week for the next six weeks, omitting them during menstrual period. Patient reported much less flow at second menstruation after commencing treatment and her general health is much improved. She has had but one treatment since second menstruation, says she is well enough and doesn't need any more and rather against my advice is now taking an extended tour through the West.

In cases like this one it is to be borne in mind that excessive menstruation is just as debilitating as is hemorrhage from any other source, and an improvement in general health may always be anticipated when the flow is reduced in amount. And, as in this case, when pain is almost constant, relieving that will, unquestionably, be a great factor in improving the neurasthenic condition which is nearly always present in these cases.

CASE II. Mrs. B. K. D., thirty-two. Two children, younger six years. Illness began during second pregnancy. One miscarriage and curettement three years ago. Anemic, neurasthenic and utterly incapacitated for her duties as housekeeper. Spends most of time in bed and never gets up before noon. Menstrual flow profuse. Constant pain over right ovary and uterus. Uterus rather low, subinvoluted, retroverted and adherent to rectum. Right ovary prolapsed, somewhat enlarged and tender. Several Boston and New York surgeons have advised ventro-fixation and their advice would have been followed had not the patient been bitterly opposed to operation. Commenced mercuro-cataphoric treatments, August, 1903. Pain entirely relieved after four treatments. Pain had always been aggravated by coughing, but after fourth treatment patient contracted whooping cough and, though her paroxysms were severe, had no pain and because of this trouble and for personal reasons she omitted treatments for five months when she again reported at the office and at this time pain had not returned and general health was improved. July 25, 1904, after twenty-three treatments, menstrual flow was normal, examination showed uterus freely movable, normal size and good position, ovaries normal. General condition first-class and domestic and social duties are easily attended to. Discharged, cured.

CASE III. M. L. I., twenty-six, unmarried. As a result of injury had partially prolapsed uterus, cystocele and dysuria, constant sharp pain over ovarian region on both sides, and yellow leucorrhea. Eight treatments, cataphoric and high-tension resulted in entire relief of pain and uterus being lifted to normal position. Has since married and had normal pregnancy and *no* return of pain.

CASE IV. C. D. G., widow, no children. Pale and "run-down." General atony of vagina which presents pale appearance. Cervix just inside labia minora. Treatment, cataphoric and static with mechanical vibration to lumbar region. Twelve treatments in all with great improvement in both local and general condition. Last treatment May, 1904. Patient since married and happily, she reports.

CASE V. Mrs. G. K. F., thirty-four. Not well since birth of child ten years ago. Appendix removed and curetted two years ago. Excessive amount of flowing each month, saturating 35 to 40 napkins. After each menstrual period great prostration due to loss of blood, so patient is about for only two weeks each month. Is too fat and suffers from chronic constipation, relieved only by use of salines. Frontal headache. Uterus subinvoluted and low. Treatment: Intra-vaginal, mercuric-cataphoresis and mechanical vibration. First menstruation after commencing treatment showed no change in amount of flow. Second menstruation flow reduced about one half, with corresponding relief in amount of prostration. Still under treatment but very irregular in attendance. Fourteen treatments to date. Feel sure of complete cure.

CASE VI. Mrs. K. I. T., twenty-six. Left ovary and appendix removed three years ago. Two miscarriages at six and two months respectively, the last occurring about a year ago and followed by curettement. Profuse painless menstruation. Intermittent pain over site of removed ovary. Anemic and shows general neurasthenic condition. Uterus large and boggy. Small lump in left ovarian region. Right ovary somewhat enlarged, low and tender. Thirteen treatments, same as in preceding case resulted in complete symptomatic cure.

The following cases, while not strictly within the scope of this paper are rather interesting so I have included them.

Mrs. G. F. T., twenty-eight. Coccygodinia since birth of child eighteen months ago. Cannot diagnose fracture. Five treatments by galvanic current and mechanical vibration completely relieved pain.

J. D. I., forty-one. Epididymitis. Gonorrhea one year ago. Slight gleety discharge, no gonococci, no stricture. Pain in left inguinal region. Left testicle enlarged and tender and epididymis as large as little finger. Was referred to me because his physician had recommended removal of left testicle, suspecting a tuberculous condition, but as the patient rather took exception to that, suggested electricity as a last resort before operation. Sixteen galvanic treatments resulted in complete cure and reduction of epididymis to normal size.

H. W. L., male, forty-six. Constipation and external hemorrhoids. Positive galvano-puncture and vibration cured both conditions in eleven treatments but relief was obtained after the third.

O. R. and F. T., males, forty-one and forty-seven respectively. Two cases of traumatic prostatitis, one due to falling astride the back of a chair and the other to pressure of a bicycle saddle. These cases were treated at about the same time and both by mechanical vibration and galvanism. Both recovered in about

three weeks' time but one has since had return of symptoms and has returned for treatment. Suspect infection of prostate by gonococci.

And now, just a word regarding electrotherapeutics in general and I am done.

In the past, and to some extent now, the treatment of disease by means of electricity has been too much left to the non-medical electrician, even if not entirely ignored. This is not as it should be, for with modern and perfected apparatus and with the experience of such men as Massey, Morton and Newman to guide us, electrotherapeutics has become just as truly one of the specialties of medicine as is surgery or ophthalmology. There is only one thing which militates against the general use of electricity by the busy practitioner, providing that he has the necessary apparatus and has become familiar with its use. I refer to the amount of time which must necessarily be given to each patient. A half hour would be a low estimate of the time each treatment demands; probably forty-five minutes would be nearer the average. In order to be on the safe side and do justice to both your patient and yourself you must administer all treatments personally. It is not wise to leave them in the hands of an assistant unless he or she be a physician.

If this very incomplete paper has, in any degree, stimulated your interest in electrotherapeutics in general and in the subject of mercuric-cataphoresis in particular, its purpose will have been served, and I do not fear that you will dispute me in the statement that a means of treatment which will cure many cases and bring about symptomatic relief in a majority of those which it does not cure has much to commend it.

Medical Progress.

RECENT PROGRESS IN GYNECOLOGY.

BY W. L. BURRAGE, M.D., BOSTON.

(Concluded from No. 16, p. 449.)

HYSTERECTOMY FOR EXTRA-UTERINE PREGNANCY AT TERM. A NEW METHOD.

H. N. Vineberg [13] reports the case of a woman of twenty-eight years, married six years and pregnant for the first time. At the date of her expected confinement, nine months after the cessation of menstruation, she had pains resembling labor pains lasting an entire day, but there was no discharge of blood from the vagina then or at any other time. Vineberg first saw the patient something over a month later or nearly eleven months after the cessation of the last menstruation. She was then emaciated, anemic and cachectic. On palpation of the abdomen two masses could be made out, the larger one on the right reaching nearly to the liver and a smaller one on the left reaching half way between the umbilicus and the ensiform. No fetal movements and no fetal heart sounds; a bruit in right lower quadrant. Vaginal examination showed a large and apparently empty uterus in front and a nodular mass behind and on the right.

At operation the fetal head was found on the left side of the abdomen deep in the pelvic fossa partly hidden by the uterus; the placenta was on the right and adherent to the abdominal wall and the intestines.

The fetus was removed and a considerable hemorrhage from the placenta resulting, the operator ligated the ovarian vessels on the left side followed by the uterine on this side, after temporarily clamping the placenta. The uterus was then amputated at the level of the internal os and the uterine artery on the right side secured. The placenta was shelled out from below upward like a large intraligamentous cyst and drainage established through the patent cervical canal and a small opening left in the abdominal wound. The operation required thirty-five minutes and the patient made a satisfactory recovery.

The advantage of this method is claimed to be the absence of prolonged suppuration which follows leaving the placenta *in situ*, an important matter in a weak patient, and the speedy cutting off of the main blood supply before removing the placenta.

TUBERCULOSIS OF THE FALLOPIAN TUBES WITH TUBERCULAR PERITONITIS.

W. J. Mayo [14] gives the results obtained by his brother and himself in their operations during the last ten years. He calls attention to the greater frequency of tubercular peritonitis in the female than in the male; in their observations at the operating table there were four females to one male in a total of 89 cases. They felt sure that tubercular peritonitis in a large majority of women is due to a tubercular process in the Fallopian tubes and that the peritoneum in its efforts to remove the infectious matter poured out of the tubes, pursuing its well-known conservative functions, was overwhelmed and became infected. The author says: "About three years ago Dr. J. B. Murphy called our attention to the fact that in tubercular peritonitis with ascites in women, the Fallopian tube of one or both sides would usually be found open, that is, an eversion of the fimbriæ with thickening of the tube, and especially of the mucous membrane. We have had an opportunity to verify this in a considerable number of cases. We further noted that, in some instances, after removal of the fluid by laparotomy with cure of the peritoneal condition there could later be detected in the region of the tubes masses which had not previously been felt. Investigation showed marked tubercular thickening of the tubes in the majority of such patients. On removal these tubes showed typical lupus of the mucous membrane, with cheesy deposits, and in a number of specimens we were able to stain tubercle bacilli in the tissues."

Very good results were obtained by complete removal of the tubes. The uterus not being involved it is not removed.

STYPTOL TO CONTROL HEMORRHAGE.

Chiappe and Raveno [15] report the results of the use of styptol in experiments on guinea pigs and in the obstetrical and gynecological clinic of Dr. Bossi at Genoa. Styptol is a neutral phthallate of cotarnin, a hydrastinin in which a hydrogen atom is replaced by the OCH_3 group. The eleven patients in the clinic on whom the drug was used comprised cases of hemorrhage following abortion; hemorrhage in the case of a fibroid; in hyperplastic endometritis; in menorrhagia at the establishment of the menses; hemorrhage and pain in parenchymatous metritis with hyperplastic endometritis; and one case with the same symptoms occurring twenty-three days after labor. The authors conclude that styptol is both a hemostatic and a sedative. It causes no pain, and in this respect is an especially valuable drug to use in pregnancy because of its sedative influence on the uterus. Stypticin on the contrary may cause much pain. The toxic dose of styptol is a little greater than that of stypticin and its action is prompter.

HYDROCELE IN THE FEMALE.

Under this title Halstead and Clark [16] report the case of a negress, forty-two years of age who was admitted to St. Luke's Hospital in Chicago for a mass in the right inguinal region. The patient was married, the mother of three children and had had always more or less dysmenorrhea and of late uterine hemorrhages. The mass in the groin had been present for eighteen years, had always been reducible but would reappear four or five days after reduction. Eight days before admission the mass, which was the size of a hen's egg, extending from the right external abdominal ring into the right labium majus, was irreducible. It was tense, elastic and very tender.

The diagnosis was strangulated hernia. At operation a cystic tumor was found, bilocular in character, the upper sac lying entirely within the peritoneal cavity. The round ligament entered this sac and was attached to its inner surface, there being a small opening where the ligament entered allowing free communication with the peritoneal cavity. The lower sac was much larger than the upper and contained many incomplete septa. The constricting point between the sacs was at the internal abdominal ring. A bean-shaped body lying free in the lower sac showed evidence of recent inflammatory action and of having been at some time attached to the wall of the hydrocele. The acute symptoms were thought to be due to obstruction to the return of fluid from the lower to the upper sac because of plugging of the opening by this body.

The authors consider this case a conclusive proof of the existence of true hydrocele of the canal of Nuck, a proposition which has been frequently disputed. They point out that hydrocele and hernia may coexist and advise incision as the safest diagnostic procedure.

VAGINAL CYSTS.

T. S. Cullen [17] reviews the subject of vaginal cysts in a well-illustrated article. He has examined in all 53 cases and in a few of these two cysts were present in the same individual. In 26 the cysts originated from inclusions of mucous membrane as a result of perineal tears or of perineal operations; four seemed to originate from vaginal glands, which the author finds actually exist in a small number of women; 11 were apparently derivatives from persistent Gärtner's ducts; 3 were situated near the external orifice of the urethra, and in 8 it was impossible to determine the mode of origin. All of the cases reported were relatively small cysts. One case is mentioned where a cyst in the posterior wall of the vagina formed an effectual barrier to delivery, and, when tapped with a trocar gave exit to about a pound of clear fluid.

It is pointed out that a cyst of the anterior wall may resemble a suburethral abscess. Pressure on an abscess, however, is followed by the escape of pus from the urethra and by collapse of the sac. The treatment advised is excision of the smaller cysts and removal of half or three quarters of the sac of the larger cysts, stitching the edge of the remaining portion of sac to the vagina. This part thus becomes vagina and gradually unfolds until it is scarcely recognizable. The operator should always bear in mind the possibility of meeting a small dilated blind ureter when operating for the removal of cysts located in the lateral or anterior wall.

ANTAGONISM BETWEEN THE FUNCTIONS OF THE OVARY AND THE THYROID.

C. Parhon and M. Goldstein [18] note certain facts as to the behavior of the ovaries and the thyroid under pathological conditions as, hypertrophy of the thyroid after the menopause, and the premature development of Graafian follicles in the ovaries of animals after the thyroid glands have been extirpated; osteomalacia is cured by removal of the ovaries, and the thyroid is known to be concerned with the process of ossification; the growth of the hair is arrested in myxedema, while it is often increased in women with disturbances of the ovarian function; peripheral vasodilator action as evidenced by the sensation of heat and increased heart action are noted when the extract of thyroid gland has been administered to patients with impaired ovarian function, and the symptoms disappear as soon as ovarian is substituted for thyroid extract. The coagulability of the blood is increased by the administration of thyroid extract, as in the treatment of hemophilia, while under the influence of the ovaries, as in menstruation, it is diminished; women having enlarged thyroids are apt to have metrorrhagia. Tachycardia, sweating, emaciation and other symptoms of exophthalmic goitre are characteristic of both thyroid hypertrophy and ovarian atrophy.

PRIMARY CANCER OF THE FALLOPIAN TUBE.

Tomsen [19] adds another case to the 54 previously reported. The patient, aged twenty-nine years, had been operated upon eight years before

for hydrosalpinx (stomatoplasty), and returned complaining of metrorrhagia and a purulent discharge from the vagina, with severe pains in the lower abdomen. A hernia existed at the lower angle of the abdominal cicatrix, in which was a painful induration. On operation the latter was found to be a left tube fixed to the abdominal wall and bladder. The right adnexa, being normal, were not disturbed. Examination of the specimen showed atypical cell proliferation. Two months later recurrence had occurred in the pelvis and abdomen, so that an explorative incision alone was possible.

INTRA-UTERINE INFECTION DUE TO CONSTIPATION.

A. Capaldi [20] conducted an experimental investigation to determine the effect on the uterus of coprostasis. Pregnant and non-pregnant guinea pigs were used, complete obstruction of the bowel being produced by suturing the anus. Most of the animals died before the end of the third day. In almost all the cases colon bacilli were found in the uterus, amniotic fluid and peritoneal cavity after death. Capaldi believes that his experiments point to the importance of regulating the bowels in gynecologic and pregnant conditions although the conditions obtaining in animals are not necessarily identical with those in the human female.

SUBPERITONEAL PELVIC FIBROMATA.

W. F. Whitney and F. B. Harrington [21] report two cases of this rare affection and collect the histories of 19 cases altogether, 4 of them being in men. These tumors originate in the tissue which lies around the peritoneum and are characterized by their enormous size, the tumor reported by Buckner in 1851, which weighed some 268 pounds being the largest neoplasm ever described. The clinical picture is that of a painless swelling, usually first noticed in the region of the labium majus or perineum in a woman from twenty to fifty years old, complicated by later growths in the ischiorectal region or groin. The continuation into the pelvis can often be made out by vaginal or rectal examination. After long duration, hernial protrusions of the peritoneum with or without coils of intestine may come to lie within the tumors. In three of the cases the bladder was found to be involved in the growth and was opened. The prognosis should be guarded as to local recurrence because of the extensive ramifications of the growth within the pelvis making complete removal very difficult. Harrington advocates a combined intra-abdominal and extra-abdominal operation, even when no abdominal tumor can be felt, so that the operator may reach all portions of the tumor and treat hernia of the viscera should it be present.

OVARIAN CHANGES IN HYDATIDIFORM MOLE AND SYNCTIAL TUMORS.

J. Wallart [22] and S. Patellani [23] have found an overdevelopment of lutein cells with polycystic degeneration of the corpora lutea and a diminution of the number of ovarian follicles in the ovaries of patients suffering with hydatidiform mole or tumors arising from the synctium. On the other hand L. Seitz [24] considers that this hyperproduction of lutein tissue has no relation to mole pregnancy and chorio-epithelioma. He has found the same condition of the ovaries and has demonstrated the same changes in normal pregnancy beginning at the second month and observable up to the end of pregnancy.

BACILLUS TYPHOSUS IN OVARIAN CYST AFTER TYPHOID FEVER.

L. Maldague [25] reports the case of a woman in whom he discovered, while she was suffering from typhoid fever, a right-sided ovarian cyst. At the beginning this showed no signs of inflammation, but during convalescence signs and symptoms of suppuration appeared, necessitating its removal. It contained 6.5 liters of odorless, creamy, pus-like liquid, containing cellular débris and fat droplets, but no bacteria when examined by the microscope. Cultures made from the liquid showed the presence of bacillus typhosus. This case shows the necessity of paying attention to organic lesions already existing or arising during typhoid fever, which favor the localization of the typhoid bacillus; also the necessity of early surgical intervention, it being the only procedure capable of saving the patients.

ADVANCING THE URETHRA FOR INCONTINENCE OF URINE.

E. C. Dudley [26] proposes a new procedure for the cure of incontinence due to the downward dislocation of the urethra from the traumatisms following child bearing. It consists in making a horseshoe shaped denudation in the vestibule and anterior wall of the vagina, the upper margin of the denudation reaching nearly to the clitoris and the lower arms of the horseshoe at the level of the neck of the bladder. Two sutures are passed through the anterior margin of the meatus urinarius and deeply through the tissues just below the clitoris. When these are tied the urethra as a whole is drawn forward so that the meatus is close to the clitoris. The operation is completed by closing the two raw surfaces, one on each side of the urethra, by interrupted sutures passed transversely.

Dudley had operated in this way on five patients with immediate good results in four and the fifth too recent to note the issue.

CLAVIN, A NEW AND ACTIVE CONSTITUEN· OF ERGOT.

Vahlen [27] has isolated from Secale cornutum a non-toxic principle to which he assigns the name clavin. This substance exerts a specific action in stimulating the contractions of the uterus. It causes neither gangrene, like sphacelinic acid, nor tonic convulsions, like cornutin, the other active principles of ergot heretofore known. Clavin is soluble in water and can be obtained from its aqueous solution by evaporation in the form of a microcrystalline powder. From a warm concentrated alcoholic solution it is thrown down in

the form of prismatic crystals 7 to 8 mm. long, which can be sublimated by careful heating. Clavin is insoluble in cold alcohol, ether and acetic ether. Its empirical formula is $C_{11}H_2N_2O_4$. It does not form salts. Intravenous injection of several decigrams in dogs and cats was followed by no toxic symptoms, while a far smaller dose exerted a marked action upon the uterus, especially in gravid animals. The writer cites two cases of protracted labor in the human female in which the subcutaneous injection of 0.01–0.02 gm. of clavin in a 2% aqueous solution was promptly followed by increase in the number and duration of labor pains, and by rapid delivery. No local irritation follows this method of administration.

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Reports of Societies.

NATIONAL ASSOCIATION FOR THE STUDY AND PREVENTION OF TUBERCULOSIS.

FIRST ANNUAL MEETING, WASHINGTON, D. C., MAY 18 AND 19, 1905.

(Concluded from No. 16, p. 452.)

THURSDAY SESSIONS. — Continued.

THE OPEN-AIR TREATMENT OF SURGICAL TUBERCULOSIS.

DR. WILLIAM S. HALSTED, Baltimore, said that up to fifteen years ago no cases of surgical tuberculosis had been treated by the open-air method. Four years after the opening of Dr. Trudeau's sanatorium, he had spoken to him on the subject and he accepted the suggestion that these cases might be benefited in this way, both cases of bone and of lymph gland involvement. He referred to the pilgrimages taken in early times for the purpose of having the laying on of the king's hand, etc., and thought that perhaps these long travels in the open air might have had much to do with the cures. It was among his private cases that the great value of the treatment had been observed. There were cases of Pott's disease, hip joint disease, knee joint disease and lymph gland involvement all benefited or cured by a sojourn at the sanatorium.

DISCUSSION.

DR. J. W. BRANNAN, New York, said this was the first reference to this manner of treating surgical tuberculosis in this country, though abroad the treatment had been employed for years. Mr. John Seely Ward, Jr., of New York, found in France at Merck-sur-Mer, an institution for the treatment of surgical tuberculosis in children, while traveling there in 1903, and on his return he interested the New York Association to set aside $15,000 for the erection of such an hospital at Coney Island. They built the hospital and installed forty-eight beds. The results had been most remarkable. The children at the camp live out of doors practically every hour. Many of them unable to walk when they came there were in a short time taking part in the liveliest games. The French believed that the good results were due to the peculiar quality of the sea air, and it was of interest to know that Dr. Halsted had secured the same results in the high altitudes.

INFLUENCE OF THE ADVENT OF THE TUBERCULOUS UPON NATIVE POPULATIONS.

DR. C. F. GARDNER, Colorado Springs: The author referred to places where patients were sent for the cure of tuberculosis without any particular instructions, not to sanatoria. Most of the resorts had no rules for the care of the sputum, etc. The patients were engaged in indoor work side by side with healthy individuals. He had sent out circular letter to fifty such resorts and the general trend of the replies was that tuberculosis had not increased in these localities.

INTRODUCTORY REPORT OF THE COMMITTEE ON THE RÔLE OF CLIMATE IN THE MANAGEMENT OF TUBERCULOSIS, DR. C. L. MINOR, ASHEVILLE, CHAIRMAN.

The speaker first referred to the exclusive use of climate as a therapeutic measure and to the superstitious belief in the effect of climate, which had sometimes led to neglect of diet and other therapeutic measures. He deprecated the habit of sending patients to resorts with no instructions whatever except to live outdoors. Instruction and supervision were essential to cure. In this way, too, many cases had returned home with the disease arrested, but with no proper idea of how to continue the good results. He warned against undue enthusiasm in the matter. The careful and faithful training of the patients as carried out at the sanatoria was of vital importance. The results in the resorts were much better than where treatment was carried out on porches and roof gardens. The relapses occurring after returning home from such a climate, he thought, bore out this view. The good effect of climate depended upon the revitalizing of the individual so that he conld fight the disease. Nowhere could treatment be so effective as under the best climatic conditions. Abundance of pure air, sunshine, dryness, altitude, wind, equability, bacterial and chemical conditions were considered. A moderate degree of humidity might be beneficial for certain cases. Wind, because of its purifying influence on the air, was of great benefit. The temperament of the individual patient should be taken into account. With patients unable to have the proper treatment at resorts, the home treatment could bring about excellent results, by using the porches, roofs, etc. The best results for the poor must come about through proper teaching as to prophylaxis. For the well to do, the committee believed that the best results were to be obtained under the favorable influence of climate.

DISCUSSION.

DR. L. F. FLICK, Philadelphia, dissented from the opinion of the committee and held the opinion that there is absolutely nothing in climate as regards the treatment of tuberculosis. He had begun his experiments as a tuberculous patient himself and had tried all climates, and was convinced that his recovery was due not to climate, but to common-sense methods of living. He believed the method could be carried out in any climate and that some of his best results had been obtained in the slums of Philadelphia, while many of his losses had been in wealthy patients going

away to seek climate. He believed the results obtained in the Henry Phipps Institute could not be surpassed anywhere in the West or South.

DR. F. I. KNIGHT, Boston, thought the report tempered with great moderation. He said that having found out that patients can be cured at home, we were too much inclined to think that treatment at home would suffice for all cases. That was not definite at all. He thought, too, that we make a mistake in talking about treating tuberculosis — it is the individual we are treating. It would be strange, he thought, if climatic conditions had no effect upon the individual with tuberculosis, when we know its beneficial effect upon those in health. It depended upon the condition of the individual patient as to where he should be placed. All of his early recoveries were in patients that had been sent west, and he thought it fair to assume that the climatic conditions there brought about the change.

DR. S. SOLIS COHEN, Philadelphia, had had patients treated in all climates and at home, and there remained no doubt in his mind that, other things being equal, patients who could afford to go to a better climate would do far better than at home.

The report of the committee was adopted by vote of the society.

GENERAL MEETING — THURSDAY NIGHT SESSION, 8 P.M.

ADDRESS BY MR. TALCOTT WILLIAMS, PHILADELPHIA, ON THE RESPONSIBILITIES OF THE LAYMAN IN THE PREVENTION OF TUBERCULOSIS.

The speaker referred to the necessity of a perpetual kick on the part of the public against the presence of dust in the public conveyances and eating places. In his concluding remarks, he said that grave danger existed that in our anxiety over a disease we should pauperize a family in our effort to save the individual. He thought that in our cities there should be a combination of hospitals to create a central bureau for the examination of all cases for free relief, and employ the aid of friends and family before calling upon charitable resources, which were never large enough for the real needs of society. A specific organization of aid to consumptives was needed at this point to avoid pauperizing an entire social stratum by making chronic illness an open passport to relief. Only for a season would this be necessary. Individual cases called for individual aid. At the early initial period, $100 would bridge the chasm from disease to recovery. This fact needed to sink into the public conscience. There was not a person, or a family, he said, among the well to do but saw some case in those employed that could be saved if air and food were provided. In Germany, 70% of the early cases were cured.

The following directors were elected: Dr. Ernest P. Bicknell, Chicago; Dr. Vincent Y. Bowditch, Boston; Dr. John S. Fulton, Baltimore; Mr. Henry Phipps, New York; Dr. C. O. Probst, Columbus; and Dr. W. S. Carter, Galveston.

The Board of Directors elected the following national officers: Dr. Herman M. Biggs, New York, president; Dr. Lawrence F. Flick, Philadelphia, first vice-president; and Dr. Vincent Y. Bowditch, Boston, second vice-president.

FRIDAY MORNING, MAY 19.

PATHOLOGICAL AND BACTERIOLOGICAL SECTION.

DR. M. P. RAVENEL, Philadelphia, chairman.

CHANNELS OF INFECTION IN TUBERCULOSIS.

DR. WELCH, Baltimore, thought it very important that there should be a section on pathology and bacteriology in an association of this nature, in order that the purely scientific aspects of the subject might be represented. It was disturbing to find that there existed even to-day so many controverted and unsettled points; that while we had a large body of accumulated knowledge regarding tuberculosis, still it was true that especially in recent years many points that had been regarded as based upon well-established facts had been disputed. Most of these controverted questions did not, however, materially influence the subject of prevention. If the source of infection was from tubercle bacilli that escaped from human beings, it did not affect our views so much whether these bacilli gained access through the lungs directly or through the lymphatic glands or intestinal tract. Naegeli, in his statistics on the subject, shows in regard to the frequency of tuberculosis that practically every one in adult life has been infected with the tubercle bacilli. Almost as startling reports have been made by others, so that the germ has been turned "ubiquitous." He thought there was considerable doubt whether healed foci found after death should be interpreted as being caused by the tubercle bacillus. We could not say that it is everywhere present; these statistics were taken from patients in hospitals and from factory districts. The idea that we could not walk down the street without incurring the danger of this disease was ridiculous. Nor should it be inferred that those who had healed lesions had more resistance than those who had developed consumption, because this might be explained by the fact that in the case of the healed lesions only a few bacilli had been inhaled, or that they were of an attenuated character, whereas to produce pulmonary tuberculosis it was essential that there should be prolonged and repeated exposure. He was, however, a believer in the doctrine of predisposition to the disease. He objected to the term "ubiquitous" or "omnipresent," as these bacilli were not to be thought of as the pyogenic bacteria living in the ground and dust and everywhere. It was an organism which could thrive only in the human or animal body. As to infection from bovine sources, he had reached the conclusion that the chief source of danger was from human beings, though infection from cattle, through milk particularly, was not to be neglected, but might be considered of minor importance. It was yet to be determined to what degree human beings have the bacilli which are transmissible to cattle. Theobald Smith had put in our hands methods by which it is possible to determine this. He thought that there was sufficient evidence now that the great majority of the cases of tuberculosis were from human beings and not from bovine sources. Speaking of the view of Behring, that infection through infants and young children is responsible for nearly all cases of pulmonary tuberculosis, Dr. Welch said he could not accept the doctrine in just the form in which it was proposed, but he did believe that tuberculosis was much more frequent in children than was generally supposed. Between 40 and 50% of children have tuberculosis, the writer said, in some form or another, as shown by autopsies. While the bacilli might enter through the digestive tract, he thought the most potent cause of consumption was by inhalation of the germ into the lungs. The writer's conclusions were that the human being is the main source of infection. They might enter through the tonsils, down through the bronchial glands and mediastinal glands and thus to the lungs. He thought the primary localization in the lungs might follow absorption from any exposed surface of the body. The usually adopted measures of prevention of tuberculosis, Dr. Welch said, rest upon a sound scientific foundation, that is, measures for guarding against the spread of tuberculosis through the sputum and of increasing the resistance of the individual by improved diet and hygienic surroundings.

THE THERAPEUTIC VALUE OF MARMORIK'S ANTI-TUBERCULAR SERUM.

Dr. Arthur J. Richer, Montreal: The writer referred to the hostile sentiment of the profession against sera and said he had himself begun its use as a skeptic. He said in conclusion that of seven advanced cases upon which he had reported in September, four had kept up their good condition. Since then he had used it in nine cases with uniformly good results. There was generally improvement within twenty-four hours. In no single instance was there any untoward effects. Every case reacted favorably from the first inoculation.

THE SERUM DIAGNOSIS OF TUBERCULOSIS.

Dr. Hugh N. Kinghorn, Saranac Lake, reported on 62 cases. Of 43 tuberculous cases, 34 reacted, 10 failed. In 9 incipient cases, 8 reacted, 1 failed. Of 24 advanced cases, 21 reacted, 1 failed. The favorable cases gave 86% of reactions. Nine out of twelve persons in robust health reacted to the test. It could not be relied upon as being a sure test for the presence or absence of tuberculosis.

THE DIAGNOSTIC AND PROGNOSTIC VALUE OF AGGLUTINATION IN TUBERCULOSIS.

Drs. M. P. Ravenel and H. R. N. Landis, Philadelphia: The conclusions were (1) that agglutination was not valuable for diagnosis; (2) agglutination in advanced cases was usually low; (3) that low agglutination meant an unfavorable prognosis; (4) that patients at sanatoria have the agglutination properties distinctly increased.

STUDIES IN IMMUNITY IN TUBERCULOSIS.

Part I — The Properties of the Serum of Immunized Rabbits. Drs. E. R. Baldwin, H. M. Kinghorn and A. H. Allen, Saranac Lake.

Part II — A Histological Study of the Lesions in Immunized Rabbits. Dr. J. L. Nichols, Saranac Lake.

DISCUSSION.

Dr. E. L. Trudeau, Saranac Lake, said that so far as the question of immunity is concerned, fifteen years ago it was looked upon as a figment of the imagination, but since then considerable progress had been made, and lately the attempts had been somewhat successful. It would seem that the vaccination, for a time at least, holds the hands of the disease. The best results were obtained with the living bacilli and by bacilli attenuated by growth on artificial media. He also referred to the experiments with the turtle and frog bacilli. He had used also the bacillus attenuated by fourteen years' growth. The vaccinations with the cold-blooded bacilli did nothing at all. He thought it well established that the living bacilli should be used, and that their virulence made some difference as to the results obtained.

Dr. William Welch, Baltimore, referred to the experiment of Mueller, who had injected into his own veins a culture of the living tubercle bacilli in his experiments of obtaining immunity.

THE BLOOD IN TUBERCULOSIS, WITH SPECIAL REFERENCE TO PROGNOSIS.

Drs. Joseph Ullon and F. A. Craig, Philadelphia: The writers said that in the unfavorable cases the red blood corpuscles were much decreased, the difference in hemoglobin following closely the change in the red corpuscles. Differential counts were rather contradictory and confusing. The lymphocytes were reduced in number in the unfavorable cases. Erythrocytes increased under treatment. Leucocytes decreased under treatment. In pulmonary tuberculosis, mild anemia with decrease in the erythrocytes is constant. In advanced cases decrease of leucocytes was of unfavorable import; he had the impression that increase of lymphocytes corresponded with increase of infection against the infection.

DISCUSSION.

Dr. William Welch, Baltimore, commented upon the findings that increase in the large and small lymphocytes corresponded with increase in the resistance of the patient, and considered this interesting because it was thought that they ingest the bacilli and destroy them, and questioned if there was anything in tuberculosis that could inhibit the polymorphonuclears as in typhoid fever.

THE THYROID GLAND IN TUBERCULOSIS. A PRELIMINARY STUDY.

Dr. W. B. Stanton, Philadelphia: It had formerly been considered that the thyroid gland was exempt from tuberculosis. He called attention to the very frequent occurrence in tuberculosis of interference with function of the thyroid and to the frequency with which the bacilli had been found in the gland. He did not desire to draw any conclusions at the present time, but simply to call attention to the possibilities.

DISCUSSION.

Dr. D. J. McCarthy, Philadelphia, said that his attention had been directed to this relationship; that all the types of thyroid trouble could be encountered in advanced tuberculosis; that the symptoms were not due to increase of thyroid, but to disturbances of the sympathetic nervous system due to the toxins form.

Dr. E. R. Baldwin, Saranac Lake, spoke of the affinity of the toxines for the nervous system and thought perhaps it was due to the nuclein, the poison of the bacillus, containing large quantities of phosphorus.

Dr. Clark, Ohio, referred to a case now under treatment in which there were symptoms of Graves' disease, with cough and expectoration, but as yet without the presence of the bacilli.

TUBERCULOSIS OF THE THORACIC DUCT AND ACUTE MILIARY TUBERCULOSIS.

Dr. Warfield T. Longcope, Philadelphia: Ponfik had first called attention to this affection and associated it with acute miliary tuberculosis. The writer had studied 25 cases with special attention to the thoracic duct as the possible origin of the process. There were 17 instances of typical acute miliary tuberculosis. The course of the disease was very rapid. The duct in 12 showed more or less extensive tuberculosis. In one, though no tuberculosis of the walls, there were tubercle bacilli present. In 23 cases of general tuberculosis, 15 showed tuberculosis of the duct. In acute cases, 76% showed infection of the duct. It was suggested that the thoracic duct was a factor in the rapid dissemination of the tubercle bacilli. Tuberculosis of the thoracic duct was of great frequency in cases of generalized tuberculosis, and in sub-acute cases the ducts might also be affected.

NOTE ON THE STABILITY OF CULTURAL CHARACTERISTICS AMONG RACES OF TUBERCLE BACILLI.

Dr. Theobald Smith, Boston. (Read by title.)

THE VITALITY OF TUBERCLE BACILLUS IN SPUTUM.

Dr. David C. Twitchell, Saranac Lake: The writer's experiments were undertaken to prove how long the bacilli would live in sputum under different

conditions, relative to the danger of the sputum as a cause of infection. The experiments of Koch and others had shown that they retained their vitality for months, but gradually became less virulent, and when exposed to direct sunlight were killed in a few hours. The material in these experiments was obtained by mixing the sputum from two patients, which was first tested upon guinea pigs. It was then dried upon handkerchiefs, carpets, rugs, buried in the ground, placed in blocks of ice, etc. The sputum in park closets retained vitality for 160 days; in bottles placed in profuse light, 120 days; in ice, 102 days; in bottle in dark closet, 101 days; on handkerchief, 70 days; in woolen blanket, 107 days; on wood, 70 days; on carpet, 39 days. The sputum in direct sunlight, one hour, but not for several hours. Darkness and moisture prolong the life of the bacilli; dryness and light shorten it, or destroy it; direct sun rays kill them in a few hours.

VICARIOUS ACTION OF THE BOWEL FOR THE KIDNEY IN TUBERCULOSIS.

DRS. LAWRENCE F. FLICK and JOSEPH WALSH, Philadelphia: The writer said it had been recognized that in cases of tuberculosis there was an irritative diarrhea or looseness of the bowels, not due to ulceration. Careful study of a number of cases had led to the belief that it was due to a vicarious action of the bowels for the kidneys. He reported fourteen cases, in all severe diarrhea over a protracted time; in all the intestines were normal and the kidneys had undergone degeneration. He did not think a diarrhea of weeks and months could be attributed to what at autopsy proved to be a normal intestine. Of the cases studied, nine showed some abnormality of the liver.

LANDRY'S PARALYSIS, COMPLICATING TUBERCULOSIS.

DR. G. J. MCCARTHY, Philadelphia: The writer defined Landry's paralysis and referred to the pathological factors; anthrax and typhoid had been found as a cause. The case reported was a patient of thirty-five, with advanced tuberculosis and cavities in both lungs. Landry's paralysis developed in the course of the disease. Post-mortem showed a mixed infection. Examination of the cord showed not a single normal nerve cell. The case was interesting simply as a rare complication which was probably a result of a mixed infection with the Klebs-Loefler bacillus.

EXHIBIT A.

TRANSLATION WITH SOME MODIFICATIONS OF TURBAN'S SCHEME FOR A METHOD OF COMPARATIVE STATISTICS FOR PULMONARY TUBERCULOSIS.

From *Tuberculosis*, monthly publication of the Central International Bureau for the prevention of Consumption. September, 1904. Johann Ambrosius Barth, Leipzig.

Suggested for use in the National Association, with the addition of the scheme offered by the committee.

1. Extent of disease in the lungs. I, II, III. For exact definition see below.

2. How long consumptive? Three months' period to date from the observation of the first clinical symptoms, *e. g.*, stubborn coughing, hemoptysis, pleurisy, loss of flesh, etc.

3. General condition of the patient. A, X. A = favorable. X = unfavorable.

4. Digestion. B, Y. B = unimpaired. Y = impaired.

5. Pulse. The pulse is to be registered every morning and evening, the patient resting.

6. Temperature. F, f, t n. F = maxima for the day over 101° F. f = maxima for the day from 99°F. to 101° F. t n = normal temperature (mouth).

7. Tubercle bacilli. +, 0. + = tubercle bacilli present. 0 = tubercle bacilli absent.

8. Tuberculous complications. Larynx. Name of the organ suffering from tuberculosis.

9. Other complications. Name of the disease.

10. Result of treatment. *Vide* Classification of Results of Treatment proposed by Committee on Nomenclature.

DEFINITION OF THE EXTENT OF DISEASE IN LUNGS, ACCORDING TO TURBAN.

I. Slight lesion extending at most to the volume of one lobe or two half lobes.

II. Slight lesion extending further than I, but at most to the volume of two lobes; or severe lesion extending at most to the volume of one lobe.

III. All lesions which in extent of the parts affected exceed II.

By "slight lesion" we understand disseminated centers of disease which manifest themselves physically by slight dullness, by harsh, feeble, or broncho-vesicular breathing, and by rales.

By "severe lesion" we mean cases of consolidation and excavation such as betray themselves by marked dullness, by tympanitic sounds, by very feeble broncho-vesicular, bronchial, or amphere breathing, by rales of various kinds.

Purely pleuritic dullness, unless marked, is to be left out of account; if it is serious, the pleurisy must be specially mentioned under the head of "tuberculous complications."

The volume of a single lobe is always regarded as equivalent to the volume of two half lobes etc.

BY THE COMMITTEE.

Proposed Classification of Cases and Results of Treatment in Pulmonary Tuberculosis to be Used in Connection with Turban's Scheme.

Progressive (Unimproved). — All essential symptoms and signs unabated or increased.

Improved. — Constitutional symptoms lessened or entirely absent; physical signs improved or unchanged; cough and expectoration with bacilli usually present.

Arrested. — Absence of all constitutional symptoms; expectoration and bacilli may or may not be present; physical signs stationary or retrogressive; the foregoing conditions to have existed for at least *two* months.*

* The length of time mentioned is, of course, somewhat arbitrary, but is intended to cover the cases which frequently occur, where the patients leave a sanatorium for various reasons, contrary to advice, after a stay of a few weeks, although all active symptoms may have ceased completely since after entrance.

Apparently Cured. — All constitutional symptoms and expectoration with bacilli absent for a period of *three* months; the physical signs to be those of a healed lesion.

Cured. — All constitutional symptoms and expectoration with bacilli absent for a period of two years under ordinary conditions of life.

Incipient (Favorable). — Slight initial lesion in the form of infiltration limited to the apex or a small part of one lobe. No tuberculous complications. Slight or no constitutional symptoms (particularly including gastric or intestinal disturbances or rapid loss of weight). Slight or no elevation of temperature or acceleration of pulse at any time during the twenty-four hours, especially after rest. Expectoration usually small in amount or absent. Tubercle bacilli may be present or absent.

Moderately Advanced. — No marked impairment of function either local or constitutional. Localized consolidation moderate in extent, with little or no evidence of destruction of tissue, or disseminated fibroid deposits. No serious complications.

Far Advanced. — Marked impairment of function, local and constitutional. Localized consolidation intense, or disseminated areas of softening, or serious complications.

Acute Miliary Tuberculosis.

Recent Literature.

Addresses and Other Papers. By WILLIAM WILLIAMS KEEN, M.D., LL.D., F.R.C.S. (Hon.), Professor of Surgery, Jefferson Medical College, Philadelphia; Membre Correspondent Étranger de la Société de Chirurgie de Paris; Membre Honoraire de la Société Belge de Chirurgie; Ehrenmitglied der Deutschen Gesellschaft für Chirurgie; Honorary Member of the Clinical Society of London, etc. Illustrated. Philadelphia and London: W. B. Saunders & Co. 1905.

In this volume Dr. Keen has republished various addresses and other papers in response to numerous requests. Many of the essays will be familiar to those who have followed his public utterances during the past years. The topics in general are those which have been prominently before the medical profession for the last quarter of a century and are here discussed in the forceful fashion which we have come to expect from the author. It is altogether desirable that professional men who have had occasion to express their ideas on general medical topics before semi-popular audiences should at certain periods collect their addresses in a single volume.

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Medical and Surgical Journal.

THURSDAY, OCTOBER 26, 1905.

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THE WISTAR INSTITUTE OF ANATOMY AND BIOLOGY.

THE recent death of Gen. Isaac D. Wistar of Philadelphia, together with the somewhat unusual provisions of his will regarding the disposition of his brain and one arm, has drawn renewed attention to the institute which was founded through his public spirit. In 1892 a charter was obtained under the laws of the Commonwealth of Pennsylvania which conferred perpetual incorporation, with the right of perpetual succession, upon a corporation which was to be called The Wistar Institute of Anatomy and Biology. In pursuance of the general plan, a modern building was erected in Philadelphia upon land given by the University of Pennsylvania at a cost of $125,000, and an endowment provided sufficient to produce an income of $3,000. In May, 1894, the institute was formally opened.

The main objects of the institute, as set forth in its charter, are to shelter, preserve and increase the extent and usefulness of the anatomical museum originally founded by Dr. Caspar Wistar, together with the promotion of study in biology. Dr. Caspar Wistar was professor of anatomy in the University of Pennsylvania from 1808 to 1818, and his anatomical collection was the first of its kind in America. At his death it was presented to the University of Pennsylvania, and later transferred to the Wistar Institute. About one half of the present building, which has been enlarged since its erection in 1893, is used as a museum, the other half being given over to laboratory processes. During the eleven years since the opening of the institute the endowment was increased by General Wistar until the annual income is approximately $40,000. By his will the institute becomes the residuary legatee of his entire estate. Naturally, also, during the eleven years of its existence, the original collections of the institute have been very materially increased, both in number and in value. A library has been accumulated and the laboratories most adequately equipped.

In the early part of 1905 a Conference of American Anatomists was called for the purpose of considering the future operation of the institute. The recommendations made by this conference were in part as follows: The principal object of the institute is to be research. In order that research may be adequately carried on, the appointment of a chief of investigation is desirable, together with the appointment of such research and technical assistants as are necessary. It was likewise recommended that the research shall lie first in the field of neurology, and second, in the field of comparative anatomy and embryology. In order to bring about closer relations between the institute and American anatomists it was recommended that a subvention to the *Journal of Anatomy* be granted and that an advisory board be appointed for the general purpose of establishing relations with the committee of the International Association of Academies for Brain Investigation. To this end a sub-committee on neurology was recommended. The committees appointed represent the best in American anatomy and neurology and should accomplish much toward bringing about the ends designed. Dr. Henry R. Donaldson was elected professor of neurology, and he assumed charge of the neurological work of the institute Oct. 1. Other appointments are being considered for the purpose of organizing a strong staff of neurological research workers. Although neurology will occupy the chief attention of the institute for the time being, it is not intended that its activities will be limited to this field. On the other hand, it is desired to make the institute a central station for anatomical research in this country, and opportunities for work will be granted to those interested in other departments than neurology.

The Wistar Institute has recently sent out a bulletin giving in some detail its objects, from which we have quoted in the foregoing statement. Those in charge of the work desire to have it clearly understood that, although the appropriate work of the institute is to deal with the larger problems in anatomical science, no small investigation, provided it be worthy, will be denied help and encouragement. To this end co-opera-

tion is eminently desirable from anatomists primarily and from physicians and surgeons secondarily who have the broader interests of medical science at heart, and it is, therefore, urged that various problems in different fields of anatomy, as they may be suggested by the experience of teachers and by physicians and surgeons in their practical work, shall be called to the attention of the institute. If this suggestion be followed, it is the hope of the managers that the institute will become a rich source of anatomical knowledge. The co-operation of physicians is very earnestly requested, and the assurance is given that assistance will be rendered toward the prosecution of any worthy investigation. The design is to offer the aid and facilities of the institution in the most liberal spirit, both for individual and for collective investigation.

We have no doubt that the suggestions made by the management of the Wistar Institute will be received in the same liberal spirit in which they are given. There is certainly offered here a unique opportunity for the prosecution of research which our constituted medical schools can only in part supply through lack of necessary funds. It will be in a measure to the discredit of American science if the fullest advantage be not taken of the opportunities here afforded, and we have little doubt that under the direction of the distinguished men who have interested themselves in the movement the Wistar Institute will widely increase its influence.

REPORT OF THE PHILIPPINE COMMISSION ON OPIUM IN THE EAST.

A PRELIMINARY report of the commission appointed some months ago to investigate the situation of the opium trade in the Orient has been published. The five months originally allowed was found to be too brief a time to cover the territory and to secure evidence. Two months of the time were given to a study of the conditions in Japan and Formosa, leaving an inadequate time for the investigation of the situation in other countries. Delay was occasioned in going from place to place, and, owing to the difficulty of establishing official relations and such other formalities, it was found difficult to enter quickly upon the work in hand. The language of certain countries visited also proved an obstacle, and the necessity of translating much of the literature naturally led to delay. In general, aid was given the committee in every way possible, but in spite of this fact many obstacles presented themselves of a sort which only experience could have foreshadowed. The Chinese in Manila, on the other hand, proved exceedingly poor witnesses, and the Chinese Chamber of Commerce practically refused to give aid.

It is somewhat remarkable that the committee had as little trouble as it did in consideration of the fact that this is probably the first time that an attempt has been made to collect the opium legislation of a number of countries in which the use and sale of the drug is a matter of large concern. In spite of the fact that the investigation is not yet closed, the Philippine committee feels that it has made a positive contribution to perhaps the gravest moral problem of the Orient. It has looked upon the questions at issue from the broadest point of view, and urges that future investigations be along the lines of determined scientific method rather than by desultory observation. The effort was made to secure information useful in forming regulations for reducing and restraining the use of opium by the Filipinos, as originally instructed. The government at Washington has not determined the conclusions or recommendations of the committee but has fully supported their decision. Recommendations, are, therefore, made with conviction, and, although a longer time would have been desirable in the preparation of the report, the opinion is that the conclusions would presumably not have been materially altered. A valuable and concise statement of the existing laws of various countries regarding opium is given, with a large number of statistics of the greatest interest relative to matters connected with the opium trade and with the use of opium as a narcotic.

The final recommendations are too detailed to discuss fully here. Some of the points touched upon are, however, as follows: Prohibition may be either immediate or progressive. Immediate prohibition is likely to lead to much suffering among habitual users of opium. Where opium has been used, therefore, progressive prohibition is considered as the more reasonable method of procedure. This should be brought about by government monopoly wherein the completest control possible under the circumstances may be attained. The revenue obtained from such monopoly should be regulated in such a way as to prove that the method aims solely at control and is not employed as a means of revenue. The definite recommendations are made that opium and the traffic therein be at once made a strict government monopoly; that at the end of three years no opium shall be imported, bought or

introduced into the islands, except by the government and for medical purposes only; that the use of opium shall be prohibited to all inhabitants who are not males over twenty-one years of age; that males over twenty-one may be licensed to use the drug; that no one known to be an habitual user of opium shall be allowed to exercise the franchise or hold government office, and that punishment shall be meted out to those who violate the laws and regulations regarding the use of opium. All habitual users of opium, desirous of being cured, shall be admitted to the hospitals free of charge if indigent. Public smoking places shall be prohibited and finally the cultivation of the poppy for the purpose of producing opium shall be made illegal in the Philippine Islands.

The report, taken as a whole, is a valuable statement of the situation regarding the use of opium in Eastern countries. Its recommendations are certainly worthy of the closest attention, and we have no doubt that the campaign thus inaugurated will in time lead to significant reforms.

PROCTOR FUND FOR THE STUDY OF CHRONIC DISEASES.

In reminding our readers of the opportunity offered by the above mentioned fund under the control of the Harvard Medical School,[1] we are enabled to state the nature of some of the subjects which have recently been investigated.

The object of the fund is to promote the study of chronic diseases by providing for the care in hospitals of persons afflicted with chronic disease and by paying the cost of investigations into the nature and treatment of such diseases. Those in control of the disposition of the income of the fund, now amounting to several thousands of dollars, are at liberty to make such assignments as will enable the investigator to devote all or a considerable portion of his time to the desired study.

During the past year several awards, each of five hundred dollars, have been made in addition to others of smaller sums. Among the subjects investigated were arteriosclerosis, metabolism in osteomalacia, abnormal metabolism of fats and cystinuria. It is needless to state that such a fund offers the strongest possible encouragement to the earnest student of medicine, especially during the waiting years which are likely to follow his graduation.

[1] See advertising column, p. 12.

MEDICAL NOTES.

A Centenarian. — The death of Mr. E. W. Strelow of Detroit at the reputed age of one hundred years and two months is announced.

Appointment of Dr. Atwood R. Wood. — It is reported that Dr. Atwood R. Wood has been appointed superintendent of the Michigan Asylum for the Insane at Kalamazoo.

Medical Inspector Stephenson Honored. — Bucknell University has conferred upon Medical Inspector Franklin Bache Stephenson, U. S. Navy, the honorary degree of LL.D., in merited recognition of study in philology, as well as of scholarship evinced in numerous writings, medical and lay. Most of these were published in the periodicals of Boston, New York, Philadelphia, London and Yokohama. The titles of various typical articles may be found in "Hamersley's Living Officers of the Navy, etc."

Appointment of Dr. Albert M. Barrett. — Dr. Albert M. Barrett, assistant physician and pathologist of the Danvers Insane Hospital, has resigned from that institution to become director of the new Psychopathic Ward at the University of Michigan and associate professor of neuropathology in its medical school. The Psychopathic Ward is a hospital of forty beds and is to receive a selected class of patients with mental disease; it will also furnish the material for a clinic of psychiatry. In connection with the hospital are research laboratories, and special facilities are provided for treatment. The Psychopathic Ward is also in intimate relation with the Michigan State Asylums, the director being the pathologist of these various institutions, and arrangements have been made so that the physicians of the asylums may pursue research work in its laboratories. Dr. Barrett leaves Danvers about the first of January, at which time it is planned to open the new clinic.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, Oct. 25, 1905, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 45, scarlatina 17, typhoid fever 19, measles 39, tuberculosis 32, smallpox 0.

The death-rate of the reported deaths for the week ending Oct. 25, 1905, was 14.45.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, Oct. 21, 1905, was 179, against 192 the corresponding week of

last year, showing a decrease of 13 deaths, and making the death-rate for the week 14.86. Of this number 89 were males and 90 were females; 173 were white and 6 colored; 106 were born in the United States, 70 in foreign countries, and 3 unknown; 41 were of American parentage, 120 of foreign parentage, and 18 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 35 cases and no deaths; scarlatina, 21 cases and no deaths; typhoid fever, 34 cases and 5 deaths; measles, 49 cases and 1 death; tuberculosis, 28 cases and 21 deaths; smallpox, no cases and no deaths. The deaths from pneumonia were 7, whooping cough 2, heart disease 18, bronchitis 3, and marasmus 8. There were 12 deaths from violent causes. The number of children who died under one year was 33; the number under five years, 43. The number of persons who died over sixty years of age was 39. The deaths in public institutions were 59.

One case and one death from cerebrospinal meningitis.

ANOTHER BODY OFFERED FOR THE PURPOSES OF SCIENCE. — By the will of Nicholas Chandler of Lynn, who recently died, his body was bequeathed to the Harvard Medical School to be used in the interests of science. Although his wish seems to have been definite in the matter, subsequent events have occurred which have prevented the Harvard authorities from accepting the bequest.

A NATIONAL FOREST RESERVATION IN THE WHITE MOUNTAINS. — The American Forestry Association and the Society for the Protection of New Hampshire Forests hope to bring before Congress this winter the question of a national forest reservation in the White Mountains. *Forestry and Irrigation* during the next few months will have several articles on this matter. The health and happiness of New England and of thousands of summer visitors from all parts of the country are directly involved.

NEW CONVALESCENT HOME OF THE BOSTON CHILDREN'S HOSPITAL. — The new Convalescent Home of the Children's Hospital of Boston, situated at Wellesley Hills, was formally opened last Tuesday, Oct. 24. The Bishop of Massachusetts conducted a short dedicatory service in the afternoon. This home is regarded as a model for such institutions. An interesting and novel feature is the provision made for keeping the little convalescents in the open air even during our coldest winter weather.

SURGEON-GENERAL BARON S. SUZUKI AT THE HARVARD MEDICAL SCHOOL. — Surgeon-General Baron S. Suzuki of Japan addressed the students of the Harvard Medical School, Oct. 23, on the care of the wounded in the recent war. He was introduced by Dr. J. Collins Warren who paid a compliment to Japan by saying that the center of medical progress had apparently shifted to the East. Baron Suzuki spoke particularly of the treatment of wounded in the naval actions and described the conditions on ship-board during an engagement. He was closely associated with Admiral Togo during the war.

MASSACHUSETTS ASSOCIATION OF CITY PHYSICIANS. — The Massachusetts Association of City Physicians, at its meeting in Boston, on the 17th inst., listened to an address by Dr. John H. McCollom of the Boston City Hospital. The title of the paper was "The duties and the responsibilities of City Physicians." Dr. McCollom was for fifteen years city physician of Boston, and gave many valuable suggestions from his long experience. About a dozen members took part in the discussion. This association has only recently been formed and new members will be welcomed. The president is Dr. E. P. Gleason, of Brockton.

Obituary.

MEMORIAL: JOSEPH MAURICE SHEAHAN, M.D.

THE Fellows of the Norfolk South District Medical Society have heard with sorrow of the death of their associate Joseph Maurice Sheahan which occurred on Sept. 21, 1905.

Dr. Sheahan was born in Braintree in 1853 and moved to Quincy when a child. He was educated in the public schools of Quincy and the Boston Latin School. He attended Harvard College where he was awarded the Boylston medal, and was graduated in 1873. He studied medicine in Paris and was graduated with honor from the École de Médecine in 1879. He then settled in Quincy where he soon acquired a large practice.

He was a skilful physician and surgeon, kind and courteous to his professional brethren and deeply beloved by a large clientage in the city of Quincy and in the surrounding towns.

He took an active interest in public affairs and served with ability as a member of the School Committee and Board of Health and Staff of the City Hospital of Quincy.

He was a most indefatigable worker, and being by nature of a strong constitution, accomplished a large amount of professional work; but after a quarter of a century of continuous labor even his rugged health at last succumbed, and he has been removed from us at the height of his usefulness.

His professional brethren will ever remember

him as the sturdy, conscientious, industrious physician. His patients will mourn the loss of a true and steadfast friend as well as a skilled and trusted physician. To his family in this hour of deep bereavement we extend our heartfelt sympathy.

Resolved, That this memorial be entered upon the records of this society, and a copy of the same be transmitted to Dr. Sheahan's family, and be furnished for publication to the BOSTON MEDICAL AND SURGICAL JOURNAL and the Quincy *Patriot*.

Miscellany.

VON BEHRING'S SENSATIONAL STATEMENT.

IN a letter from Paris, on the International Congress on Tuberculosis, the Paris correspondent of the *British Medical Journal* (Oct. 14) writes the following concerning the initial sensational statement of v. Behring in regard to his discovery of a cure for tuberculosis — a statement which he has since considerably modified:

After a week's work and feasting, the Congress held in Paris has come to an end, but not without some element of that sensationalism which appears to be the delight of the people of Paris. On Oct. 5, the *Matin* published an article calculated to arouse the wildest hopes of all interested in the struggle against tuberculosis, in the shape of an announcement that Professor von Behring had discovered a "cure" for consumption, that the details would not be published for about a year, and that the greatest confidence could apparently be placed on the statement that the research would revolutionize the treatment of the disease. Together with this article was printed an extremely bad likeness of the Marburg bacteriologist. On the following day the report that von Behring had been prevailed upon to make his statement on the next day was freely circulated and published. Those who stood on intimate terms with a certain section of the Parisian bacteriological world may have gleaned some further information, but if that is so, they kept their secret well, for, in spite of theories and conjectures, no one seemed to have any idea of what Behring was going to say, save that his book was already in the press, and was decidedly voluminous. It was not difficult, however, to pick up several pieces of information, and, patching these together, to make out that the reason given for the announcement of his so-called discovery was not the question of priority, nor yet the pressure of others who had been following the development of the work, but lay rather in a desire of certain individuals to "squash" another work which seemed to be securing for itself a firm hold of the members of the Congress. If this conjecture is well founded, von Behring was approached and pressed to make the sensational statement and, not being averse to a somewhat dramatic effect, consented without actually being a party to any jealousy. But one must be very careful, especially after the way in which the French and English lay press has taken up the subject, to issue a solemn and loud warning not to accept indefinite statements, without even any experimental details. Von Behring failed to convince the majority of the scientists of Europe that he had done a great work when he delivered his address in Cassel, and it is not too much to say that if it were not for his name having become great in connection with diphtheria antitoxin, this work would not have aroused much notice. It has not been accepted, and, therefore, one fails to see how this new research, which is to a certain extent built up on the immunizing experiments, can be even provisionally accepted. Going a little further into the inquiry, we are given to understand that the active immunization, which he believed that he had previously produced, could be substituted by a passive immunization, and by means of these antibodies the curative process can be achieved. This, of course, applies to laboratory animals, such as guinea-pigs and rabbits; so that even if von Behring can show later, and others can confirm his work, that a true passive immunity can be produced on these animals, it does not by any means follow that the same applies to man. From this it may be inferred that it was premature of the Paris papers to speak of a cure of tuberculosis. It may, therefore, be pointed out that, as far as the material which von Behring has laid before us is concerned, there is no reasonable justification to anticipate any important progress in the treatment of tuberculosis.

THE LIMITATION OF THE PRINCIPLE OF PRIVILEGED COMMUNICATIONS.

ACCORDING to A. L. Benedict, Buffalo, N. Y., in *American Medicine*, Oct. 21, the adoption as a rule of ethics, of the principle that all professional communications should be absolutely privileged, goes further than the underlying principle of protection of weak and erring humanity, and may extend so far as to involve the physician as *particeps criminis*, in a social, if not a legal sense. The underlying consideration on which professional secrecy is based is not that the physician belongs body and soul to every sick or injured man who appeals to him for assistance, but that the physician should be a negative quantity, so far as the social or legal punishment of sin or discredit is concerned. When a patient, after being warned and expostulated with, deliberately decides to transmit disease, to defraud a victim, to endanger lives, professional secrecy should no more be required of the physician than is the concealment of a case of quarantinable disease for the sake of the selfish interests of the patient.

Correspondence.

PROTECTION AGAINST AND COMPENSATION FOR DOG BITES.

HOLDEN, MASS., Oct. 18, 1905.

Mr. Editor: Having occasion a few days ago to procure preventive treatment for a boy bitten by a rabid dog, I learned to my discomfiture that there is no place in this state where such treatment may be applied. Is this creditable to the state of Massachusetts?

It appears further that if a dog kills or injures cattle, or domestic animals, the owner thereof may have recourse to the "dog fund" for satisfaction in case the owner of the dog is impecunious. But a "person" bitten by a dog has no redress except upon the dog's owner — most often a broken reed when it comes to a question of reparation for injury. From which the deduction is plain that a "person" has less value and less rights than a hen or a sheep or a calf.

This, in brief, is my complaint. The remedy lies with the Legislature, and will be made effective whenever The Massachusetts Medical Society demands it.

Yours respectfully,

C. W. STICKNEY, M.D.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, OCT. 14, 1905.

CITIES.	Population.*	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diphtheria and croup.	Typhoid fever.	Cerebro-spinal menin-gitis.
New York	3,908,644	1,175	382	28.37	12.18	1.62	1.70	.76
Chicago	1,990,780	477	155	31.65	7.96	1.46	2.72	—
Philadelphia	1,407,988	368	96	21.19	8.96	—	5.36	—
St. Louis	633,606	—	—	—	—	—	—	—
Baltimore	543,229	176	60	31.25	8.05	3.40	3.98	—
Cleveland	444,251	—	—	—	—	—	—	—
Buffalo	406,645	—	—	—	—	—	—	—
Pittsburg	362,403	121	40	28.10	14.05	3.30	8.26	—
Cincinnati	338,277	—	—	—	—	—	—	—
Milwaukee	325,990	—	—	—	—	—	—	—
Washington	300,776	—	—	—	—	—	—	—
Providence	196,744	52	8	32.69	7.69	3.85	1.92	—
Boston	593,598	199	52	19.09	9.55	1.00	2.01	—
Worcester	127,963	30	8	13.33	13.33	—	6.67	—
Fall River	105,697	23	9	43.48	4.35	—	4.35	—
Cambridge	97,426	25	7	16.00	8.00	4.00	—	4.00
Lowell	94,845	34	13	17.65	8.82	—	2.94	—
Lynn	77,025	29	8	13.79	—	—	6.90	—
New Bedford	74,821	16	10	6.25	18.75	—	6.25	—
Springfield	73,494	17	4	5.88	17.65	5.88	—	—
Lawrence	69,939	18	8	33.33	16.67	5.56	—	—
Somerville	68,188	16	4	18.75	18.75	6.25	—	—
Holyoke	49,124	16	9	13.25	—	—	—	—
Brockton	47,782	11	3	18.18	—	—	—	9.09
Malden	37,990	9	4	22.22	22.22	11.11	—	—
Haverhill	37,818	7	3	14.29	—	—	—	—
Salem	37,586	18	15	11.11	—	—	11.11	—
Chelsea	37,377	17	7	23.53	17.65	—	5.88	—
Newton	36,694	5	1	20.00	20.00	—	—	—
Fitchburg	33,017	5	—	20.00	—	—	—	—
Taunton	30,932	14	3	14.29	14.29	—	—	—
Everett	29,108	7	3	28.57	—	14.29	14.29	—
Quincy	28,087	14	4	42.86	—	7.14	—	—
Waltham	26,239	2	—	100.00	—	50.00	50.00	—
Gloucester	26,008	—	—	—	—	—	—	—
Pittsfield	25,000	6	1	—	—	—	—	—
Brookline	23,424	8	2	25.00	—	—	—	12.50
North Adams	22,125	7	1	14.29	—	—	—	—
Chicopee	20,187	8	4	25.01	12.50	12.50	—	—
Northampton	19,942	—	—	—	—	—	—	—
Medford	19,638	3	—	—	—	—	—	—
Beverly	15,223	3	—	33.33	—	—	33.33	—
Newburyport	14,678	9	1	11.11	11.11	—	11.11	—
Hyde Park	14,492	3	2	66.67	—	—	—	—
Woburn	14,401	6	1	50.00	—	—	—	—
Melrose	14,394	4	2	—	—	—	—	—
Leominster	14,290	—	—	—	—	—	—	—
Marlboro	14,072	4	2	—	—	—	—	—
Westfield	13,609	5	3	40.00	40.00	—	—	—
Clinton	13,105	11	4	—	27.27	—	—	—
Peabody	13,097	—	—	—	—	—	—	—
Attleboro	12,792	—	—	—	—	—	—	—
Revere	12,647	1	—	—	—	—	—	—
Adams	12,482	4	4	25.00	—	—	—	—
Milford	12,105	—	—	—	—	—	—	—
Gardner	11,981	2	1	50.00	—	—	—	50.00
Weymouth	11,585	3	1	33.33	—	—	—	—
Framingham	11,549	—	—	—	—	—	—	—
Watertown	11,302	4	2	—	25.00	—	—	—
Plymouth	11,118	—	—	—	—	—	—	—
Southbridge	10,947	3	2	66.67	—	—	—	—
Wakefield	—	1	—	100.00	—	—	—	—

* As last reported.

Deaths reported, 2,996; under five years of age, 949; principal infectious diseases (smallpox, measles, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption), 795; acute lung diseases 306, consumption 324, scarlet fever 10, whooping cough 16, cerebrospinal meningitis 13, smallpox 0, erysipelas 6, puerperal fever 7, measles 9, typhoid fever 81, diarrheal diseases 278, diphtheria and croup 49.

From whooping cough, New York 4, Chicago 5, Philadelphia 1, Baltimore 4, Fall River 1, Fitchburg 1. From scarlet fever, New York 4, Pittsburg 4, Chicago 1, Westfield 1. From cerebrospinal meningitis, New York 9, Cambridge, Brockton, Brookline and Gardner 1 each. From erysipelas, New York 3, Chicago 1, Baltimore 1, Boston 1. From typhoid fever, New York 20, Chicago 13, Philadelphia 12, Baltimore 7, Pittsburg 10, Providence 1, Boston 4, Worcester, Lynn and Salem 2 each, Fall River, Lowell, New Bedford, Chelsea, Everett, Waltham, Newburyport and Beverly 1 each. From measles, New York 5, Chicago, Baltimore, Pittsburg and Cambridge 1 each.

In the seventy-six great towns of England and Wales, with an estimated population of 15,609,377, for the week ending Oct. 7, 1905, the death-rate was 13.5. Deaths reported 4,041; acute diseases of the respiratory organs (London) 67, whooping cough 40, diphtheria 52, measles 37, smallpox 0, scarlet fever 49.

The death-rate ranged from 3.7 in Kings Norton to 26.3, in Tynemouth; London 13.2, West Ham 11.3, Brighton 10.2, Southampton 7.3, Plymouth 9.9, Bristol 12.8, Birmingham 14.0, Leicester 10.1, Nottingham 13.3, Birkenhead 15.7, Liverpool 17.1, Wigan 20.5, Bolton 15.5, Manchester 16.4, Salford 17.1, Halifax 13.0, Bradford 13.5, Leeds 11.8, Hull 14.7, Sheffield 13.0, Newcastle-on-Tyne 13.2, Cardiff 10.1, Rhondda 14.2, Merthyr Tydfil 21.9, Bournemouth 15.8, Portmouth 14.5.

METEOROLOGICAL RECORD.

For the week ending Oct. 14, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

DATE	Barometer.	Thermometer.		Relative humidity.		Direction of wind.		Velocity of wind.		Weather*		Rainfall in inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A.M.	8.00 P.M.	Daily mean.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	
S.	8	30.06	69	75	46	71	48	69 S	W	S W	10	13	C.	C.	0
M.	9	30.06	62	69	54	57	74	68 N	W	E	10	6	C.	C.	0
T.	10	30.22	50	55	46	69	72	70 N	E	E	6	10	C.	C.	0
W.	11	29.98	52	56	48	72	83	78 S	E	S E	8	15	O.	O.	T.
T.	12	29.64	52	60	44	74	64	69 S	W	W	14	12	C.	C.	.13
F.	13	29.98	50	57	42	64	52	52 W		S W	12	11	C.	C.	0
S.	14	30.22	58	68	49	62	46	54 W		W	11	7	C.	F.	0
Σ		30.02		63	47		65								.13

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. Σ Means for the week.

RECENT DEATH.

DR. LOWELL HOLBROOK died Oct. 16, in Thompson, Conn., at the age of eighty-seven years. He was still practising at the time of his death and had been continuously for sixty-three years. He was a surgeon of the Eighth Connecticut Volunteer Infantry during the Civil War.

BOOKS AND PAMPHLETS RECEIVED.

Department of the Interior. Bureau of Government Laboratories. I. Birds from the Islands of Romblon, Sibuyan, and Cresta de Gallo. II. Further Notes on Birds from Ticao, Cuyo, Cuhon Calayan, Lubang, and Luzon. By Richard C. McGregor. Manila. 1905.

Department of the Interior. Bureau of Government Laboratories. I. Description of New Buildings. By Paul C. Freer, M.D., Ph. D. II. A Catalogue of the Library. By Mary Polk, Librarian. Manila. 1905.

Third Annual Report of the Superintendent of the Bureau of Government Laboratories. For the period from September 1, 1903, to August 31, 1904. Manila. 1905.

The Electric Action of the Organs of the Human Body. By Albert J. Atkins, M.D. With Discussion by Dr. A. P. Grinnell, Rev. Henry Frank and Others. Reprint.

A Manual of Organic Materia Medica and Pharmacognosy. An Introduction to the Study of the Vegetable Kingdom and the Vegetable and Animal Drugs, comprising the Botanical and Physical Characteristics, Source, Constituents, Pharmacopœial Preparations, Insects Injurious to Drugs, and Pharmacal Botany. By Lucius E. Sayre, B.S., Ph.M. Third edition, revised. With Histology and Microtechnique by William C. Stevens. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1905.

Handbook of Physiology. For Students and Practitioners of Medicine. By Austin Flint, M.D., LL.D. Illustrated. New York: The Macmillan Co. 1905.

The Principles and Practice of Medicine. Designed for the Use of Practitioners and Students of Medicine. By William Osler, M.D. Sixth edition, thoroughly revised from new plates. New York and London: D. Appleton & Co. 1905.

The Harvard Medical School. A History, Narrative and Documentary. 1782–1905. By Thomas Francis Harrington, M.D., Class of 1888. Edited by James Gregory Mumford, M.D., Class of 1888. In three volumes. Illustrated. New York, Chicago: Lewis Publishing Company. 1905.

Original Articles.

THE RELATION OF ANIMAL LIFE TO HUMAN DISEASES.*

BY THEOBALD SMITH, M.D.,
George Fabyan Professor of Comparative Pathology in the Harvard University Medical School.

When we speak to-day of the relation of animal life to the diseases of mankind, we mean the infectious processes, for the thought that animal life may have some influence in the production of other than infectious diseases is so remote that it need not be considered at present.

Medical literature abounds in references to the possibilities for harm lurking in the infectious diseases of animals, and in nearly every great epidemic animal diseases have been reported as precursors or attendants. Bold inferences have been drawn from mere relations in time and space and fanciful theories have had their day, such as the one that bovine tuberculosis was human syphilis in the cow.

The close association of man with domestic animals was a sufficient reason for unfounded inferences as well as certain true deductions. From the time that man became agricultural in the dim, uncertain past, animals have been his close associates. This relation, still very intimate in agriculture, is less so with the growing urban population of the world. But even in our densely populated cities we come in contact with dogs, cats, mice, rats and birds in our homes and with horses on the streets. Everywhere are consumed the flesh and dairy products of cattle, the flesh of sheep, swine and horses and of many varieties of game, both mammals and birds, of fishes and mollusks. We are beset by insect pests which parasitize upon our skin and draw our blood. In short, almost every one of the great divisions of animal life has one or more representatives which play some rôle in directly benefiting or injuring human beings.

With the beginnings of bacteriology, the relation of animal life to human disease gradually emerged from a fog of possibilities and suppositions, and each year has brought greater clearness and definition. Some old views are being abandoned, or at least greatly circumscribed, and new ones opened to investigation.

That the pathological relations between man and animals should be manifold and diverse naturally follows from the great diversity among the animals themselves. If we endeavor to group the human diseases associated with animals, we find three main divisions:

1. Diseases common to man and animals.
2. Human diseases accidentally carried by animals or animal products.
3. Diseases resulting from a complex and intimate relation between man and some insect on the one hand, and some microscopic parasite of both on the other.

The diseases which are generally spoken of as common to man and animals may be still further separated into two classes:

1. Diseases belonging to some animal species and occasionally transmitted to man, such as glanders, anthrax, foot-and-mouth disease, rabies, trichinosis and echinococcus disease.

2. Diseases belonging to both animal and man, such as the bubonic plague and those due to certain tapeworms.

It is of interest to note that there are, in fact, no strictly human infectious diseases which are occasionally transmitted to animals spontaneously. There are human infections which can be inoculated into animals, and this practice is largely made use of in the study of certain human diseases by the experimental and comparative method, but infection in the normal way by simple contact or cohabitation is unknown. It might appear to some that vaccinia in the cow is an exception to this general rule. It is now quite generally accepted that vaccinia had its origin in smallpox grafted upon the cow, and this theory is in closest accord with what we know of vaccinia, on the one hand, and of infectious diseases in general on the other. But even in this case the disease is an inoculation-disease, implanted on the udder by the hands of the milker. The disease germ undergoes profound changes and remains permanently modified. As regards bubonic plague, in which the play of the infection between human beings and rats seems to be perfectly free, so that we might say that the infection belongs equally to man and to rats, there is still some doubt as to the original source of the virus. Some authorities claim, and with much reason, that the plague is a disease of rats primarily. This view is not supported by R. Abel, who, after a painstaking examination of the literature dealing with the black death of the Middle Ages was unable to find any references to rats.

This scarcity of diseases common to man and animals is most probably due to the gap existing between man and the animals he has domesticated. A much closer physiological relationship exists between man and the higher apes. This has recently had a rather striking confirmation in demonstrations of blood relationship by the precipitin test and the inoculability of syphilis upon the highest apes. It is of the utmost importance to man that so few infections may pass between him and the higher animals. If we were compelled to share only a fraction of the infectious diseases belonging to the domestic animals, the progress of sanitation would make it necessary for us to get rid of such animals entirely, otherwise the control of these diseases would be impossible.

The second group of infections carried by animals or animal products is largely due to incomplete sanitary progress. The transmission of diseases by milk is at best a result of uncleanliness in the handling of this product, and up to the present we are not aware of any specific infection of the cow carried to man in milk unless it be the microbe of foot-and-mouth disease, and rarely

* Read Sept. 29, 1905, in Boston, Mass., at the annual meeting of the American Public Health Association.

the bacillus of bovine tuberculosis. The diseases carried by milk are chiefly of human origin, and the milk is simply a favorable vehicle. It is possible that the future may unearth certain infections belonging to the cow other than those mentioned which may make trouble in the human subject, but at present we do not know them. There are known cases of actinomycosis of the udder, but their relation to this disease in man seems problematical, to say the least.

The agency of oysters and other shellfish is precisely similar to that of milk. These animals are not known to be afflicted with any parasitic or bacterial diseases dangerous to man, but they act apparently as more or less passive agents in bringing back to us the human infections consigned to sewage. Since both shellfish and milk are dealt with in detail in another section of the program, I content myself by referring to them thus briefly.

The common house fly is still another agency whose field of activity remains to be more accurately determined. It has not been wholly neglected, for the work of Nuttall, Alice Hamilton, F. W. Lord and others have each in another way contributed important data convicting or exonerating this insect of certain practices. It still needs more detailed study, not only in the adult, but in the larval stage, in order that measures pointing to the restriction of breeding may be more widely known and applied.

We may safely affirm that the common fly is a passive carrier of infectious agents, and that it is not a true secondary host of any human infections, as is the case with certain species of mosquitoes, ticks and the tsé-tsé fly of Africa. These are all species which draw blood, and this gives them the opportunity to act as intermediate hosts of certain well-known pathogenic organisms. Nevertheless, the flies which abound near and in human dwellings are fit objects of study for the sanitarian. A better knowledge of their functions may lead to more adequate measures for the prompt collection of refuse in which they breed than is now possible in large cities, owing to public indifference.

As regards the kind of infections carried by house flies, we must at present assume that they may carry on or in their bodies all kinds of infections, though the danger of such infections is greatly diminished by the inability of these flies to pierce or lacerate the skin. The chief danger lies in the contamination of foods consumed raw or of foods sterilized by cooking, to which flies have access after this process is completed. In this regard, as in so many others, the sterilization of foods by cooking and subsequent protection is a most valuable safeguard, and all practices favoring the consumption of foods raw or even partially cooked should be frowned upon by sanitary science unless some very well supported arguments are presented in opposition.

The diseases of mankind, transmitted by insects acting as necessary intermediate hosts are of world-wide importance. Malaria, yellow fever, sleeping sickness, filariasis, and perhaps other still imperfectly known infectious diseases, are inoculated by insects, and they are the ones which make the tropics such forbidden territory for the immigrant from temperate climates. Not only he himself, but the domestic animals he brings with him, are destroyed by the same or similar living agencies. To this group of diseases I shall only refer in passing, for they have been so widely discussed in recent years as to have become familiar even to the laity.

Perhaps that group of human diseases which is transmitted by the well known domesticated animals and their products is still uppermost in our minds when we speak of animal diseases in their relation to the public health. It is these diseases which crop out sporadically in the practice of physicians and which often remain unrecognized because of their rarity and irregular course. It is the same diseases in animals upon which the practice of veterinary medicine is built and which have made it such an important adjunct to the health officer. It is to these diseases that I wish to devote the remaining pages of this communication.

Inasmuch as the object of investigating animal diseases is to find means of controlling and suppressing them if possible, I must point out before discussing this group of infections one great practical difficulty. In the group of diseases carried by insects, ticks and rats, there can be no question at present that the extermination of these carriers is to be aimed at. We know of no useful functions carried on by mosquitoes, flies and rats which we cannot dispense with. But the group of domesticated animals which may transmit to us certain of their diseases is most useful to us. The essentials of our dietary in health and disease are derived from domesticated animals. They yield many other valuable industrial products. Among them are our companions and load bearers. We have a double problem before us, to protect human lives and to promote the welfare of our animals as well. Hence the conflicting counsels in the suppression of the transmissible diseases and the need for conservatism.

The significance of animal parasites, overshadowed by the bacteria since the beginnings of bacteriology, is now gradually being recognized. Fortunately, only a small number of human parasites are also the property of our domestic animals. Among these the most important are the *Tænia echinococcus*, that formidable and very small tapeworm of the dog, the beef and pork tapeworm and trichina. The occasional discovery of other animal parasites in man need not concern us here. As regards *Tænia echinococcus*, it is well known that the cystic stage invades man and is a dangerous guest. It is found occasionally in our abattoirs in swine, but it is fortunately rare at present. It is far more common in Europe, and its presence in man not infrequently demands surgical interference.

Of the other parasitic diseases due to animals, trichinosis is the only one of considerable importance. Thorough cooking of pork products

is known to render it harmless, but in spite of this cases are discovered now and then, and H. U. Williams has found at autopsies nearly 5% of the bodies examined harboring trichinæ. This figure cannot be made general, since the individuals autopsied belong largely to the lower stratum of society.

Trichinosis in swine affords an illustration of the fact that we are occasionally willing to make sacrifices in the interest of foreign trade which we would not make for the general welfare. Owing to the demands of the German government, there has been built up an extensive system of inspecting animals, including pork for trichinæ, destined for export. This inspection is not designed to protect the American consumer but only the foreign customer. It is, however, highly probable that a considerable amount of the inspected meat is consumed in this country.

The system has undoubtedly done much good in calling attention to the necessity of inspecting all animals destined for food and all meat products. It has trained many men to recognize disease, and has been an educational factor of no mean influence. Yet it may well be questioned why our central government should pay the cost of inspection under the conditions under which it is made, rather than the packer, is as the case in the German system.

From the standpoint of public health, perhaps in recent years the most notorious of the infectious animal diseases is bovine tuberculosis. Identified by Koch in his celebrated work of nearly a quarter century ago in its etiology with human tuberculosis, this affection became a target for nearly every one who was endeavoring to fight the human disease. The human carriers of bacilli were for the time being forced to the background by the energy and the money spent in destroying infected cattle. To-day we know that the tubercle bacilli found in cattle can be readily distinguished from the tubercle bacilli found in the human disease with certain relatively rare exceptions. For in some forms of the human disease, notably in tuberculosis of the mesenteric glands, bacilli are now and then detected which are at present indistinguishable from those of cattle. Human and bovine tuberculosis can no longer be regarded as identical, however, and it remains for us to study most thoroughly those isolated cases in which bovine bacilli are found, in order that we may know the conditions which favor such invasion.

Bovine tuberculosis for obvious reasons must remain a proscribed disease, both in the interest of man, cattle and other domestic animals. There must be no backward step in the movement to restrict this disease, although opinions will differ as to the means by which the disease is to be controlled.

When the crusade against bovine tuberculosis started, it was proposed to destroy all animals which give a positive tuberculin reaction. This drastic method is happily laid to rest and a more conservative and less costly procedure has taken its place. In the hands of individual owners, the old method may still score a triumph by completely eliminating tuberculosis from a given herd after a certain number of months or years.

The complete eradication of bovine tuberculosis is made difficult by the existence of mild, latent types of the disease which may recover. These react towards tuberculin as vigorously as the more advanced, clinically defined cases. In the destruction of animals, attention has been therefore diverted from tuberculin as a guide, and the effort has been to eliminate only those animals which discharge tubercle bacilli. The mere presence of a tuberculous focus within the body does not mean danger to man and cattle. It is only when tubercle bacilli are being discharged from the udder, the lungs, the uterus, or the skin that the environment is imperilled. It may be urged that the methods for detecting bacilli in the secretions and excretions are inadequate and require time, but this is no reason for destroying immense numbers of cattle apparently well. It is rather a challenge for veterinary medicine to devise and improve methods for rapid as well as more accurate diagnosis.

If bovine bacilli easily infect man, it is strange that the army of people employed in cow stables who are exposed, just as the cows themselves are, to bovine tubercle bacilli coughed up, should not yield a larger number of tuberculous patients. Possibly in the early years of life the mucous membranes are more easily invaded than in adult life. This harmonizes with the fact that the cases in which bovine bacilli were found were largely children.

The study of tuberculosis in Japan by Kitasato has amply demonstrated that human tuberculosis may flourish where bovine tuberculosis is almost unknown among native cattle, and where cows' milk forms a negligable part of the diet of infants and children. Even in that country the proportion of cases of tuberculosis starting in the digestive tract was found to be as high as in milk-consuming countries where bovine tuberculosis is common.

A most timely and efficient aid in the warfare upon bovine tuberculosis is the movement for cleaner milk gradually gaining strength. Whatever can be done to reduce the number of bacteria in milk will indirectly aid the work against tuberculosis. For clean milk means a normal or nearly normal udder. It means that discharges from the uterus will be detected and these are frequently due to tubercular processes. The demand for clean milk will eradicate all emaciated or sickly animals, many of which are tuberculous. In short, the crusade against dirty milk calls attention to all those defects which a cow shedding tubercle bacilli is likely to exhibit, and we may rest content that this movement will, at least for the present, meet the demands for milk free from tubercle bacilli.

Tuberculosis among other domestic mammals, such as dogs, cats and swine, is derived from either bovine or human sources. The tubercle bacillus of birds possesses certain differential characters which distinguish it from mammalian

bacilli, even after years of cultivation. The disease in mammals other than cattle is of subordinate interest to the sanitarian, but it should not be wholly lost sight of, and it needs further study before its significance can be definitely estimated.

Another infectious disease which is now thoroughly disseminated over the entire civilized world and which is giving public health authorities considerable work to do is glanders among horses.

Glanders and tuberculosis have much in common. The underlying principles governing infection and dissemination through the body are nearly the same. From the standpoint of etiology there is, however, this important difference. There may at present be a reasonable doubt concerning the animal origin of any case of human tuberculosis, with the chances preponderatingly in favor of its human origin, because we have a tubercle bacillus fitted to the human species and one fitted to cattle. In glanders of the human subject there can be no doubt that it is of equine origin, for there is no human glanders independent of horses.

When we proceed to examine the statistics of human and equine glanders we are at once struck with its wide prevalence in horses and its very restricted occurrence in man, in spite of the intimate association of many human beings with horses continually discharging glanders bacilli. Glanders, so far as we know, is not conveyed to man except by direct inoculation or the infection of a wound. But even this cannot explain the restricted occurrence in man, for wounds and abrasions are common among those handling horses. Possibly some association of the glanders bacillus with septic organisms in the discharges from nose or skin of the horse may explain the occasional invasion of the bacillus.

In the struggle against this disease the same difficulties have arisen which surround tuberculosis in cattle. The mallein test reveals a certain number of mild, latent, non-infective cases which probably get well. What to do with such frequently very valuable animals is not easily decided. It seems to me that here also conservative measures should prevail, and that the methods of diagnosis should be applied to determine whether glanders bacilli are being discharged or not. If the animal is disseminating glanders bacilli it should be destroyed. If not, it should be inspected at intervals and the mallein test applied until the reaction is negative or nearly so.

Human anthrax is to-day associated with animal products, rather than with the infected animals. Hides, hair and wool carry the disease from far distant permanently infected countries into the heart of our large cities. Factories in which these products are utilized may infect streams and pastures, and thus create enzoötic foci dangerous to cattle, horses and sheep. Such foci are known to exist in our country, east, west and south, and with a more intensive agriculture and a more distributed animal industry than now exists, anthrax may play a much more important part in our country than it does at present.

The anthrax bacillus differs essentially in its biological characters from the highly parasitic bacilli of tuberculosis and glanders. It survives in a resistant spore form, and is capable of carrying on an independent life in the soil. It must be attacked in two ways. Agriculture and public health must co-operate in preventing the formation of new enzoötic foci and in circumscribing and suppressing those now in existence. The workmen in factories must be protected by a careful supervision of animal products coming from infected countries and their disinfection. All cases of anthrax in man should be studied with special reference to the source of infection.

Fortunately, surgery combined with the use of a promising anthrax serum may take away much of the danger of this disease. The improvements in protective inoculation of animals made by Sobernheim by injecting a protective serum with the culture are destined to cheapen the process and at the same time strengthen the immunity over and above what has hitherto been attained by the Pasteur vaccine.

There is still one other infectious disease for which human beings and animals appear to be equally susceptible. Rabies or hydrophobia is a disease which stands quite by itself in its etiology, mode of dissemination and species susceptible to it. Its causal agent remains unknown, though certain bodies within the cells of the brain have recently been found to have at least diagnostic importance. It is the only one of the infectious diseases of unknown etiology which is inoculable into a large series of animals. All the others are restricted to one or two, rarely three, different host species. It is also unique in this, that it is disseminated only by inoculation through a wound.

Rabies as an infectious disease belongs to the dog and the wolf. From them it passes to other mammals. Cats are also known to have conveyed it through their bite. In the dog and wolf the disease is perpetuated by this habit of inflicting wounds with their teeth. In other animals and in man the disease is not inoculated by them. The extermination of this disease in civilized communities depends upon the management of dogs. It would seem to be a comparatively easy thing to check and completely wipe out this disease, yet there are many obstacles to encounter. The fondness of the human being for the dog, which at least with us makes men and women impatient of any restriction placed upon canines, stands in the way. So does the laxity with which stray and ownerless dogs are dealt with. The variable and often long period of incubation of this disease makes it difficult to exercise sufficient control over exposed and suspected animals. There is, however, nothing to stand in the way of ridding our country of rabies if we really and earnestly desire to do so and make the necessary sacrifices.

There is another group of diseases having its source in the animal food supply which has

received considerable attention in European countries, and but little in our own. I refer to outbreaks known as meat poisoning, which are characterized by more or less severe and even fatal attacks of gastro-enteritis. The animal food involved has come from cows, calves, horses and swine. The bacteria found have, as a rule, been related to the hog-cholera or enteriditis group, and are perhaps identical with the recently discovered paratyphoid and paracolon groups of bacilli of man. There are, however, other bacteria involved in some of the outbreaks, notably the bacillus of botulism and Proteus. In Europe (England, Germany, Belgium, Norway, etc.), the diseases known as meat poisoning have occurred generally in an epidemic form, because the meat from a single animal is sold in a restricted locality, such as a village or small town. As the animal in most instances is raised and slaughtered in the same community, the source of an epidemic of gastro-enteritis is easily traced. In our own country it is far more difficult to trace the source of such diseases, because the meat supply comes from a distance, and parts of the same animal are scattered over a large territory.

The frequent occurrence of such epidemics in certain portions of Europe is in part due to the habit of eating meat raw. In England, however, outbreaks have been traced to meat preparations not sufficiently sterilized by cooking or baking. In our country the taste for very rare beef is not much more elegant than that of the German for raw spiced pork or beef.

With us, the rearing of cattle on a large scale in thinly populated territories has operated against the prevalence of diseases which might lead to food poisoning. There is no likelihood that this mode of raising animals will continue indefinitely. With a denser population in the western states we shall inevitably adopt the methods of European countries and we shall then have to cope with the same diseases. It is even probable that they do occur among us at present, but remain unrecognized. The various forms of gastro-enteritis known as ptomaine poisoning probably have in many instances the same etiology as cases of meat poisoning.

We are at present wholly unable to attach any precise significance to the many bacteria which live upon the mucous membranes of our domestic animals, such as various cocci and the varieties of colon bacilli, the streptococci and staphylococci of septic processes and the various anaërobic bacilli of the intestines. While we may not go far astray in claiming the harmlessness of most of them, there is still ample justification for more thorough comparative study of these micro-organisms, since there may be among them a small number of dangerous forms.

The experimental and comparative study of animal infections which has been going on for over twenty-five years, beginning with the earlier researches of Pasteur and Koch, has had far more influence in the development of sounder theories of disease and has led to many more notable discoveries in that large field of parasitism, which shows its hand in almost every known malady, than most of us would be prepared to admit. The origin of new ideas and fruitful theories is almost never contemporaneous with their acknowledged discovery. Discoveries are often simple explosions of material suitably prepared long beforehand. Much of this material has been laboriously brought together during the investigations dealing with animal diseases. To it we owe above all a strengthening of certain principles and doctrines, among which the most important are the latency of certain infectious agents in the body and their persistence in certain diseases after recovery. The broader study of infection has also emphasized the mutual adaptation of host and parasite to one another leading to variations of immunity in the host and to specific variations of the parasite which circumscribe its power to invade other host species. Finally, it has thoroughly demonstrated the necessity for looking primarily to living beings, be they human or animal, as transmitters and disseminators of infection, and only secondarily to dead objects and fomites.

A CASE OF PYLORIC STENOSIS IN AN INFANT.

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AND
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JOHN G., the first child of healthy parents, was born April 7, 1905, after a normal labor. He was breast-fed and did very well for the first two weeks, there being no vomiting and the movements being normal. Vomiting then began and steadily increased. He was weaned on April 25, after which he was given Mellin's food for two days and then a weak, modified milk. The vomiting continued, however, and the bowels became constipated, the movements being small and green. He was admitted to the Infants' Hospital, May 5. Just before entering the hospital he passed a closed bib-pin about one inch long which had been missing for about two weeks. The onset of the vomiting coincided pretty closely, therefore, with the disappearance of the pin.

Physical examination: He was small and fairly nourished, but the circulation was rather poor and the skin somewhat dry. The fontanelle was small and depressed, the tongue dry and somewhat irritated. The abdomen was not distended, but examination was difficult as the muscles were held rather firmly; there was no definite spasm, visible peristalsis or tumor. Examination was otherwise negative. The weight was 2,870 gm.

The diagnosis of chronic gastric indigestion was made, with stenosis of the pylorus to be considered. The history of the passage of the bib-pin seemed pretty conclusive that two weeks previously there had been no stenosis of the pylorus.

Various sorts of food were tried. He was first given whey, 30 cc., 10 feedings; then a mixture containing fat 2%, sugar 5%, whey proteids .25%, casein .25%, lime water 5%, — 60cc. at a feeding and 8 feedings. The intervals were then lengthened to three hours, still giving 8 feedings in the twenty-four hours. The mixture was also peptonized for ten minutes before each feeding. Tube feeding was then tried. A few

days later he was given a mixture of whey 50 cc., milk sugar one-half teaspoonful and lime water 10 cc., with a tube at the same intervals, the object being to allay muscular spasm and to throw the work of digestion off of the stomach. Nutrient enemata of skim milk and milk sugar were not retained.

In spite of these variations in the diet vomiting continued. During the first few days very little was vomited at a time and the nurses were very sure that never more than a part of the feeding was vomited. At this time the vomitus consisted almost entirely of water and rarely contained any curds. The amount of the vomitus steadily increased, however, and after May 15, practically everything was vomited. There was nothing characteristic about the vomiting at any time. Sometimes he vomited after almost every feeding and often several times after a feeding. It was very rarely that the vomitus was more than what was taken at the last feeding. The vomiting was never explosive and he was sometimes nauseated without vomiting. The stomach was washed out daily.

The bowels did not move the first two days; then there was one small, black movement resembling meconium. There was one movement of this character on the 10th and on the 11th; after this there were several movements daily, most of which contained a few curds antl some mucus. On the 15th the movements were yellowish or brown. After this, however, the movements showed no evidences of milk.

The physical examination of the abdomen was unsatisfactory until May 13, because of the rigidity of the abdominal muscle. On that day the lower border of the stomach was palpable just below the umbilicus and at times visible peristalsis was made out, although it was not distinctly in waves. On May 15, a mass the size of a small marble, but not definitely rounded, was felt about 1 cm. below and to the right of the umbilicus; the consistency of this mass seemed to vary from time to time; at times also it did not feel rounded but cord-like; it was freely movable and very deep, but not tender. This mass was felt on one other occasion, at which time peristalsis, though visible, was less marked than before. It was not in waves and seemed to be rather a distention and contraction of the stomach.

Although stenosis of the pylorus was suspected at entrance, a positive diagnosis of that condition was not made until ten days later when the enlarged pylorus was felt. Operation was advised at that time, but the parents would not give their consent until later. It is possible that an operation would then have given better results. It is evident from the history that there was no stenosis sufficient to give symptoms at birth and that there could not have been any marked degree of stenosis at the time when the bib-pin was swallowed. After that, however, it evidently developed pretty rapidly, although a positive diagnosis was not possible until several days after entrance to the hospital. The meconium-like character of the movements was undoubtedly the most important diagnostic point before the development of the physical signs. This peculiar character of the dejections has not been emphasized in the past as much as it probably should be. There was nothing characteristic about the vomiting and nothing which would differentiate it from the vomiting of any ordinary indigestion. Stenosis of the pylorus cannot, therefore, be ruled out because of the absence of explosive vomiting or of the vomiting of large amounts at a time.

Operation, May 18, 1905. Ether anesthesia. Patient in very poor condition at the beginning of the operation.

A median incision was made from just below the sternum to the umbilicus. On opening the abdominal cavity a markedly dilated stomach presented in the wound, the lower border of which extended to or a little below the level of the umbilicus. The great omentum was reduced to a layer of peritoneum without fat. At the pylorus a bluish-red, smooth and rounded tumor about the size and shape of a good-sized olive was seen. To palpation the tumor was dense and elastic. There were no signs of any inflammatory process. Below the pylorus the entire intestinal tract was collapsed and contracted. (Fig. 1.) The small intestine looked like a narrow ribbon and on manipulation showed no contractions, — lying as if paralyzed. The large intestine throughout its whole extent lay close against the posterior abdominal wall and was about the size of a lead pencil. The short mesentery of the transverse colon and of the small intestine prevented either the classical anterior or posterior operation, as it was not possible to get behind the transverse colon and the small intestine would not reach, without tension, to the anterior surface of the stomach. Therefore, the layer of peritoneum forming the anterior wall of the lesser peritoneal cavity was torn through and the posterior wall of the stomach drawn out and held with an intestinal clamp. The first loop of the jejunum was then caught up in a similar clamp and drawn over the transverse colon. After carefully protecting the general peritoneal cavity by gauzes a routine gastro-enterostomy was done with a continuous stitch on the inside through all the coats and on the outside a continuous Lembert stitch. Celloidin linen thread was used for both sutures. The opening between the stomach and the intestine was about 3 cm. long. The anterior layer of the great omentum was sutured to the stomach wall at either side of the gastro-enterostomy and a piece of the omentum was placed over the anterior layer of sutures. When the intestinal clamps were taken off gas passed from the stomach into the descending loop of the jejunum. The abdominal wall was closed with through and through silkworm-gut sutures.

At the end of the operation which was completed within half an hour the child was very cyanotic and almost pulseless. The response to stimulation was not marked, though during the afternoon the color became better and small amounts of barley water were taken by mouth, most of which was retained.

The child died at eleven o'clock, ten hours after the operation.

Post-mortem examination was made through the operation wound.

The sutures of the gastro-enterostomy were holding perfectly, and the abdominal cavity was clean. The stomach had collapsed to about one half the size seen at the operation. There was no evident thickening of the stomach wall. Stomach contents had filled the distal loop of the jejunum for about six inches, but the rest of the intestinal tract was contracted and collapsed as at the time of the operation. The pyloric tumor (see Fig. 2), which was 2.2 cm. in length and 1.5 cm. in the greatest diameter, presented the same appearance as described above except the color had changed somewhat, due to the post-mortem staining with bile pigment from the gall bladder. As noted at the operation there were no signs of any previous inflammatory process. The organs other than the gastro-intestinal tract were normal and the intestine showed no evidence of stricture, but the transverse colon was held close against the posterior abdominal wall having almost no mesocolon and the mesentery of the small intestine was noticeably shortened. On filling the stomach with water the fluid could be expressed under pressure through the pylorus. A sound, No. 16 French, could be passed from the stomach into the intestine. No

attempt was made to pass an instrument through the pylorus.

Sections of the hardened specimen failed to show any pathological folds of the mucus membrane at the pylorus. There was no evidence of a previous ulcer. Microscopical examination of longitudinal and transverse sections of the tumor showed a marked hyperplasia of the muscle fibers of the circular muscle coat. (See Figs. 3 and 4.) Mallory's connective tissue stain proved the tumor was not due to an increase in the amount of connective tissue.

This case emphasizes certain facts with regard to stenosis of the pylorus in infants, namely:

The symptoms may vary much from those of absolute pyloric obstruction, and they do not necessarily begin at birth.

The peculiar meconium-like character of the dejections may be of great diagnostic importance.

In complete or nearly complete pyloric obstruction, operation seems to offer the only hope of recovery.

The operation must be done before the infant has become reduced to the last degree by starvation, therefore an early diagnosis is imperative.

Pathologically, the condition is an entity.

ON THE SEPARATION OF THE CRIMINAL CLASS FROM OTHER INSANE IN INSTITUTIONS.*

BY C. A. DREW, M.D., BRIDGEWATER, MASS.,
Medical Director, State Asylum for Insane Criminals.

MR. CHAIRMAN: The several subdivisons of the subject which your Board and the Committee of Trustees of State Institutions have chosen for discussion read as follows:

First. Does every insane person who is in the technical status of a criminal properly belong to the criminal class?

Second. Does every person who has committed a crime, but who is acquitted or not indicted by reason of insanity, properly belong to this class?

Third. Should an insane convict be transferred at the expiration of his sentence from an institution for the criminal class to one for other insane?

Fourth. Should an insane ex-convict be transferred to an institution for the criminal class from one for other insane?

Fifth. Should an insane person of criminal instincts and conduct who has never been in the technical status of a criminal be transferred to an institution for the criminal class from one for other insane?

Sixth. Should drunkenness be deemed a crime in this connection?

Seventh. Is there imperative need of removing women of the criminal class from the institutions for other insane?

Eighth. What further provision for the criminal class is required?

Ninth. Other aspects of the subject.

The issues involved in this subject may fairly be called living issues, because the several phases of the subject have been agitated by the people and before the General Court intermittently, we learn, since 1864. Not a few laws have been framed since the State Asylum for Insane Criminals was created by the General Court in 1895. Public opinion has thus in a measure become crystallized into law, but we may fairly assume that the crystallization is not perfect or satisfactory to all concerned, else there would be no call for a renewed discussion before this conference. It may be that the lines of demarkation between the criminal and the non-criminal classes have not been well drawn, but it cannot be said that the lines have been drawn without due consideration and much discussion. I suppose it would be almost impossible to frame laws to separate so-called classes that would do exact justice to all concerned. It ought to be remembered in this connection that to classify men justly would require something more than finite insight. It might be strongly argued that a man's status, under the law, should not be a basis of classification at all. It might be urged that his conduct alone should classify him. If we had an institution for the dangerous and incorrigible class of chronic insane, it might be urged with reason that all other insane would fall into natural divisions and be properly cared for in the several state hospitals and farm colonies, without considering his past or present relation to the courts at all. Of course a large number, perhaps a majority, of the convict insane and some others of the so-called "criminal insane" would be properly cared for in such an institution. I am inclined to think this would have been a logical arrangement years ago, before the State Asylum for Insane Criminals and the Medfield Asylum were created. But we have reason to believe that such a plan has not, does not and may never satisfy the people.

In the popular mind, the man who has been caught in wrong doing and punished at least by being arrested is a creature to be shunned or a hero or heroine to be glorified, according to the nature of the crime and the point of view, and should, perforce, be considered lower or higher than one who has lived law-abiding, or, being bad, has been successful in not being found out. So it is that a class has been created and a separate institution demanded for their treatment when they become insane.

If Massachusetts were the only state, or if the United States were the only country where the technical relation of the individual to the courts is made a basis of classification, we might expect that the demand had been artificially created and would be short-lived. But we are forced to the conclusion that the demand for a classification based on the individual's technical status under the law is not transitory, and it seems pertinent for us to inquire how we should interpret the laws we have; wherein, if at all the laws do not represent equitable principles, and how we may use the elasticity of the laws in fairness and approximate justice to all.

It may be noted in passing that the printed law

* Read at the thirteenth semi-annual conference of the State Board of Insanity and Trustees and Superintendents of State Institutions of Massachusetts, May 16, 1905.

bearing on our subject is somewhat inconveniently scattered through several chapters of the two volumes of the Revised Laws of Massachusetts. Section 16, Chapter 218, of the Revised Laws, tells us that persons held for a crime, but not indicted by reason of insanity, may be sent to a hospital for insane or to the State Asylum for Insane Criminals at the discretion of the Court, according as his previous life has been law abiding or criminal or vicious. Here we have the first question of our subject answered in the negative by law, which, in the absence of competent evidence to the contrary, may be accepted as crystallized public opinion.

We did not make this law and we do not feel called on to defend it, but it may be proper to point out that it recognizes the fact, or assumes the hypothesis, if you please, that a man may commit a homicide or any lesser offence against his brother or against decency, when controlled by the obsession of a diseased or defective brain, without deserving the stigma of a criminal at all.

Sections 11 and 12, Chapter 219, of the Revised Laws, treats of persons found to be insane after indictment for some offence, and reads in part: "If a person who is under indictment is at the time appointed for trial found by the Court to be insane, it may cause him to be removed to *a state hospital* for such time and under such limitations as it may order."

Section 15 of the same chapter (219) treats of persons tried for some offence and acquitted by reason of insanity, and reads in part: "If a person is acquitted by the jury by reason of insanity, the jury shall state that fact to the Court, which if satisfied that he is insane, may order him to be committed to a *state insane hospital* under such limitations as may seem proper."

Section 16 of the same chapter (219) treats of a person indicted for murder or manslaughter, acquitted by the jury by reason of insanity, and reads in part: "The Court *shall* order him committed to a *state insane hospital* during his natural life."

It may be noted that these Sections (11, 12, 15 and 16), Chapter 219, Revised Laws, from which we have quoted, treating of persons indicted but not tried, also persons tried and acquitted by the jury by reason of insanity, all refer to "a state insane hospital," and do not mention the State Asylum for Insane Criminals at all. If we read no further we might well conclude, as some have thought, that the Courts were obliged to send these men to one of the six hospitals for the insane in the commonwealth; but Section 17 of the same chapter (219) continues to lay down the law and reads in part: "An insane male prisoner who is described in Sections 11, 12, 15 and 16 may be committed or removed to the State Asylum for Insane Criminals, instead of to a state hospital, if in the opinion of the Court, he has been a criminal or has been vicious in his life." Apparently with the view to make the law more elastic, lest an injustice should, perchance, be done by the Courts and to give full authority for the correction of any injustice, laws have been passed giving the State Board of Insanity almost unlimited authority to correct any errors which the Courts may have made.

Section 42, Chapter 85, of the Revised Laws, reads in part as follows: "The State Board of Insanity may transfer to and from the state insane hospitals and the State Asylum for Insane Criminals any of the insane male persons mentioned in the Sections 12, 15 and 16, Chapter 219, and Sections 101, 102 and 103 of Chapter 225, if such transfer will insure a better classification of insane criminals."

Here we have plainly stated or clearly implied, in law, an answer to the second question of our subject. If it is held that these laws do not represent enlightened public opinion, the burden of proof is on those who would overthrow or annul them. I had no part in framing the laws, but more to the point is the fact that Judge Lowell and the Hon. Rockwood Hoar, both members of the General Court and both trustees of the Worcester Hospital for the Insane at the time, were each active in framing and passing the earlier of these laws, of which more recent laws have been largely further elaborations.

It seems to some of us that the principles embodied in Chapters 85, 218 and 219 of the Revised Laws are equitable principles and safe guides to action. We feel that the elasticity of these laws, with the discretion left to the Courts and the State Board of Insanity, is to the credit of those who framed the laws, and has not and is not likely to work injustice to any one.

Section 87, Chapter 87, Revised Laws, which chapter treats of the duties and powers of the State Board of Insanity, if taken by itself, and considered as independent of all the other laws bearing on the subject, would seem to give the State Board of Insanity authority to nullify all legislation on the subject. We do not suppose that the General Court intended Section 87 of Chapter 87 to repeal all these laws which specify those persons whose status under the law makes them proper persons to be sent to the State Asylum for Insane Criminals when found to be insane, and we do not suppose the State Board of Insanity so interpret that section; therefore, we have felt and do feel that with the possible exception of some provision for insane women of the criminal class, no further legislation to separate the criminal class from other insane in institutions is urgently needed.

Having been invited to assist in opening this discussion it has seemed fitting to dwell longer on the laws we have and the general principles involved than to argue at length on any single proposition. Something might be said in favor of transferring an insane convict to another hospital at the expiration of his sentence. It might be urged that when a man has served his sentence he is and by right ought to be no longer a criminal, nor forced to wear the criminal badge. It might be strongly urged that his innocent wife, sister and children have a right to demand that the stigma be removed. Practical considerations, on the other hand, might strongly urge against

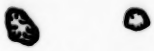


FIG. 1. Cross sections to show the actual size of the contracted large and small intestines.



FIG. 2. Semi-diagrammatic drawing from post-mortem specimen to show the relative size of the pyloric tumor.



FIG. 4. To show the hyperplasia of the circular muscle coat.



FIG. 3. Longitudinal section through the pyloric tumor to show the thickening of the circular muscular coat.

his removal. As the law stands, his case can be judged on its merits. If his offence was a first offence, if he was a criminal by accident or passion, rather than a vicious criminal at heart, the State Board of Insanity have authority to transfer him to another hospital, and, in my opinion, it would be an unjust and narrow spirit who would protest or stay their hands. We believe the same principle should guide in deciding the case of the ex-convict. There are ex-convicts and ex-convicts. The excellence of the law, as it now stands, is that an impartial board, having full authority, may judge each case on its own merits. Some insane ex-convicts should be transferred to an institution for the criminal class and some should not. I am well aware that expediency might demand a rigid uniformity of action, but the moral and ethical view of the question does not seem to show that uniformity here would be always just or best.

Concerning persons "of criminal instincts and conduct who have never been in the technical status of a criminal," I am strongly persuaded that it would be assuming a great and unwarranted responsibility to put the badge of criminality on one who has never been adjudged a criminal by the Courts. I believe the public would support the contention of relatives, who must share the disgrace, that the assuming of such an authority was a gross injustice and a high-handed outrage. I suspect the Courts would resent such action, and a suit for damages might not be a remote probability.

If it be not expedient for every institution to care for its own bad patients who are not and never have been criminals, then it is clearly the duty of the state to provide for such at one of the asylums for non-criminal insane. Else the distinction of criminal and non-criminal insane should be entirely abandoned.

We believe that chronic drunkenness is very demoralizing and that a man arrested and held for drunkenness should be considered as if held or convicted for any other violation of law. But drunkenness, never stamped by the Court as criminal, is only a vice and should not be labeled as crime by state officials or medical men.

As to the imperative need of removing women of the criminal class from the institutions for other insane, I cannot speak with conviction or feeling as I think some others present can. We only know that the conditions are very unfavorable for such an annex at the State Farm. We now have a population of over 1,700. The prison department for men is much the larger with the insane hospital, — holding still to its old name of asylum, — an alms department for men and a general hospital department for men, ranking in the order named. Our institution has about reached the limit of our heating plant, and our fields and woods are full of paroled men prisoners. There are serious constitutional objections to engrafting an hospital for the insane on to a prison which becomes more evident as the graft grows larger. To engraft an hospital for insane women on to a penal institution for men is incongruous to say the least, even if one male graft has taken and grown without destruction of the parent vine. Would it not be better to use a cottage at Medfield or Worcester Asylum where large departments for women are already organized? Is it not true that nearly all these so-called criminal insane women are fairly quiet and good workers? Is it not true, as we have heard stated, that there are more men than women of the criminal insane type in the state hospitals of the commonwealth? Is it not true that these men are held because they are at least not objectionable patients? Have we reason to suppose that the superintendents of other hospitals would wish to have all or nearly all their women patients who are under the technical status of criminals transferred to the State Asylum for Insane Criminals, supposing we should go to all the expense of a new institution outside of the sphere of influence of a man's prison for their care? Would it be just to those whose terms of sentence have expired to transfer them? How many of them are exerting a baneful influence where they are? How many are there who could not be well cared for at the asylum in Medfield or Worcester without the patients of these asylums feeling any baneful influence? We raise these sub-queries in no factious spirit of opposition to a separate hospital for women of the criminal class. If it be best and most expedient to add another department to the already too numerous departments at the State Farm, we are open to conviction and will accept any new honors that may be thrust upon us with becoming meekness, and if the time should come when Standard Oil stock holders shall have reached the "technical status" of criminals, we will cheerfully call for an appropriation to build suitable accommodations for their insane, but we do not think that criminal "instincts" should entitle them to special and separate provision.

THE ACTIVE TREATMENT OF MUSCULAR RHEUMATISM.*

BY BENJAMIN BRADSON CATES, M.D., KNOXVILLE, TENN.

WHETHER muscular rheumatism is a "local manifestation of a general toxemia," which, being interpreted, means, the general toxemia induces a localized angiospasm, causing ischemia, which is the cause of pain; or, due to a defective metabolism; or, superinduced by improper elimination of the waste products of the economy, owing to a sluggish circulation, has not been definitely agreed upon.

Nevertheless, if a quickening of the circulation will stir up the blood, clean out the choked flues, and burn up the noxæ, it is both logical and reasonable to assume that whatever brings this condition about will place the system in the best possible condition to resist the onslaught of disease.

* Read before the Medical and Surgical Society of the Tennessee Medical College, Jan. 3, 1906.

Now, each case of muscular rheumatism, as in other disease, is a law unto itself; that is to say, some will have it as the result of meat diet, so it is said, causing the fatuous "uric acid diathesis"; some as the result of improper clothing, exposure to draughts, sitting in damp clothing, or, mayhap, all these things together act as contributing factors.

One thing has made quite an impression upon me in persons the subjects of muscular rheumatism, and it is this: They nearly all have torpid livers, heavily-coated furred tongues, offensive breaths, constipation, and frequently headaches; in other words, they often show the classic signs of a condition we are wont to term "biliousness."

Another thing you will frequently notice is that chronic rheumatics are often heavy eaters. They eat fast, chew their food improperly, are sluggish in thought and action, and complain much of indigestion.

Now, without pausing to discuss further the merits, or rather the demerits, of muscular rheumatism, I shall pass rapidly on to the main point in our discourse, and that is, the active treatment of muscular rheumatism, merely calling attention to an important fact, learned by experience and observation, that it is not what a man eats that hurts him, so much as how he eats it.

Formerly in my practice, I relied, to a large extent, in treating muscular rheumatism upon anti-rheumatics, but after long-continued use of these remedies, with little good, so far as curing the trouble was concerned, I often found I had upset the patient's stomach to such an extent, I consider the remedy worse than the disease.

For this and other reasons, I became discouraged with *drugs* in the treatment of muscular rheumatism, and abandoned them for more strenuous measures, with gratifying results. In other words, I threw physic to the dogs.

Now, what are these strenuous measures? In the first place you must yourself learn that muscular rheumatism is a condition calling for surgical measures, that is to say mechanical therapeutics, and not a disease. In the second place, you must inform your patient this condition is ofttimes obstinate to treatment, that he must be dealt with along strenuous lines; no half-hearted measures will suffice if he expects relief. That immoderate eating and drinking, in fact, any infraction of nature's laws as to improper clothing, etc., or abandonment of his regular exercise, will soon remind him of a return of his former trouble.

In order to illustrate my point, let us take up a case and study it. Mr. A. comes to you and says he wants to be cured of muscular rheumatism; he has been to a number of physicians for the same trouble and had no relief.

You go over Mr. A.'s case thoroughly, examine him carefully and find out exactly where his trouble lies. This is necessary in order that you may know what muscles to exercise, and in order that you may do this, your patient should be stripped. In making your examination, you notice Mr. A. has pain, especially when he makes certain movements; his eyes are dull, his breath is fetid, his tongue is heavily furred, he has frequent headaches, and he is afflicted with constipation.

For sake of illustration, we find Mr. A. complains of pain in his shoulders, elbows and wrists, loins and down the thighs. Any movement of these joints is very painful.

Having now gone over your patient thoroughly, located exactly the points of interest, you revolve in your mind the course you purpose following. Of course I am going on the theory you have absolute control of your patient; that he will obey implicitly every order you give. If he does not agree to do this, give up the case.

The course you purpose following is the proper exercise of the affected muscles by the use of the proper agents, and to this end you resort to the use of Indian clubs. Indian clubs are better than dumb bells because you may get a better swing of the muscles, and again with the clubs the muscles are exercised in a gentle, natural way without throwing them into a state of clonic contraction.

Before resorting to these movements, it is best to commence by giving your patient a free mercurial purge, preferably of blue mass and follow it up by castor oil and some good stomachic.

In teaching the exercise of these different muscles, tell your patient when he attempts them on his own account, which must be every day, and a certain length of time, he must not use clubs too heavy, generally one to two pound clubs are heavy enough, also it is best to strip naked — using a bath towel around the loins — so the muscles being untrammeled may have full swing.

The best time to exercise is on getting up in the morning and the best gauge of the length of time is to stop as soon as the muscles feel tired. Generally ten to fifteen minutes will suffice.

After the exercise comes a plunge into a bath tub of cold water and a vigorous rubbing with a rough bath towel, till the skin glows.

To make a long story short, I will say the successful treatment of muscular rheumatism hinges on two things, to wit: The *proper* mastication of one's food, and the proper exercise of one's muscles, using only those methods that call into play movements most nearly akin to the natural play of the muscles, and to that end I shall direct a few remarks.

First, as to one's eating: It is a fallacy to say that one cannot digest a certain kind of food. One's stomach can digest anything one can masticate. At times the physician must be didactic in giving instructions along this line. It is a difficult thing for one who has always been used to bolting one's food to eat properly; it takes several months of close attention to eating to learn to masticate one's food properly, and without one's attention being constantly on the food being masticated.

The first thing to do along this line is to examine the patient's teeth for defects. If any

defects are found have them repaired at once. If, as often is the case, the patient has no teeth, have him get a set. It is not worth while to fool away time giving digestants when the teeth are out of order. Teach the patient that the stomach and intestines have no teeth and are only for digesting food. Teach the patient to chew the food slowly and freely until the tongue can feel no lumps in the bolus. In other words, chew the food until it is like wax.

In regard to rules for exercising the muscles with Indian clubs, it may be set down that there are no rules, save for the physician to discover the offending muscle or muscles, and then to teach the patient how to use the clubs so as to exercise the muscles at fault.

To illustrate: I will suppose one has lumbago and sciatica, and also rheumatism affecting the muscles around the top of the shoulders. The patient having stripped, with a bath towel wrapped around the loins, stands face front, holding the clubs, with the feet widely apart — notice the position and the object — throws the entire weight of the body on the right lower limb, the face following the direction of the clubs, at the same time extending the clubs far to the right and above the head; now the patient may, if he so desires, without changing his position in making this movement, let the clubs fall backward over his shoulders, and in so doing act powerfully on the deltoids and scapular muscles, and still holding the clubs in this position by dropping the shoulders with the clubs pointing downward and backward, act also on the pectorial muscles, the weight of the clubs drawing the shoulders backward; then bring the clubs down in front in a broad sweep towards the floor, shift the assumed right position to the left side. The patient then in slow and measured time keeps up these side movements for two or three minutes. Now, in the same position, feet apart, he turns his face to the right, with arms extended above the head, he makes a profound salaam, bringing the clubs to the floor; then rising to the erect position, he throws his body and head as far back as possible, at the same time bringing the clubs back over his shoulder in a broad sweep to the rear; these forward and backward movements of the arms exercise the deltoids and scapular muscles attached to the humerus; repeat these movements for two or three minutes. Then face to the front and repeat the right lateral movements for two or three minutes. Then face to the left and repeat the right and front movements. In this way all the muscles at fault, as well as those not offending, are exercised equally. This done, lay aside one club and swing with right hand from right to left in broad sweeps, in front reaching as far as the arm will go, by swaying from one lower limb to the other; with each swing incline the body slightly forward. Let the body and face follow the movement of the arm. Repeat this movement for two minutes. Take the club in the left hand, and repeat with left hand for two minutes the same movement as was done with right arm.

Without changing the position, the face looking straight ahead, with right hand bring the club in a broad sweep down in front, at the same time bending the body far towards the floor; then assume the exaggerated erect position with head thrown back, and as you do so, bring the arm in a broad sweep over the shoulder towards the rear; repeat these movements for two minutes. Then shift the club to the left hand and repeat these same movements for two minutes. In other words, one exaggerates the movements the blacksmith assumes when with a heavy hammer he strikes the iron at white heat.

Now, any one at all familiar with his anatomy can at once see the vast advantage of these exercises in bringing into active play the muscles at fault, in muscular rheumatism involving the lumbar and shoulder muscles, while the muscles of the back, abdomen and thighs share equally in the good coming from healthy exercise.

Again, the question may be asked how to exercise the muscles in sciatica? By alternately flexing the thighs on the abdomen for two or three minutes, as if one were trying to step on a platform as high as one's head.

A rigid adherence to these rules will not only cure the most obstinate case of muscular rheumatism, but will develop the muscles, bring back the bright eye, banish indigestion and constipation, give elasticity to the step, and soon your patient, unless he has his daily exercise and cold plunge, will feel uneasy all day long.

Medical Progress.

REPORT ON PROGRESS OF SURGERY.

BY HERBERT L. BURRELL, M.D., AND H. W. CUSHING, M.D., BOSTON.

A TEST OF CONDITION: PRELIMINARY REPORT.

An important and suggestive paper on this subject has been written by C. Ward Crampton,[1] who states that "there does not exist to-day a reliable test of condition, although its need is felt in very many quarters. The physician would be glad to know accurately what the real condition or relative degree of health is in the patient who comes under his care for the first time. It is of the utmost importance for him to know to what extent the trouble complained of affects the general health and vitality. It would give him a real guide on which to base his advice to the overworked or run-down in prescribing a treatment of tonic, rest or exercise. It would give him a real method of determining the increase of health resulting from such treatment."

The value in surgery of such a test of condition of a patient is obvious. Dr. Crampton has suggested an ingenious theory founded on observation. Its real value will have to be determined. He states, "In brief, the test consists in the comparison of the systolic blood pressure and the heart rate of the recumbent position with those

[1] The Medical News, Sept. 16, 1905, p. 529.

of the standing position. The physiology involved is as follows:

"On assuming a standing position the voluminous splanchnic veins are constricted by the vasomotor action of the splanchnic nerves. If this contraction is effective against the increased pressure brought to bear through the gravity, the blood pressure in the upper body rises. If it is ineffective, it fails to rise or actually falls. This accounts for the great disparity of opinion on this point, some observers finding a regular rise of 10 to 15 mm., others finding no average change, others a fall, when the standing position is assumed after the recumbent. This is an indication, therefore, of the efficiency of the splanchnic vasomotor mechanism, which is not only important, but essential to life. Upon its successful working depends the blood pressure in the brain, on the maintenance of which depends not only the consciousness but the working of every function of the body and even life itself.

"This mechanism is the latest in the body to develop, appearing as it has only after man has taken to the erect position. It is very easily wearied by lack of sleep, by work and by any unhygienic proceedings in general; even the routine of our daily life exhausts it to a greater or less degree. The total abrogation of its functions leads to the accumulation of the blood in the abdomen, the exsanguination of the rest of the body, and death. It is a very fair presumption that the working of this most important function upon which depends blood pressure, the distribution of the blood, and the working of the brain will be an indication of the condition of the body as a whole and an index to its general efficiency.

"Should this be so, we shall have arrived at the end of our investigation, and it will only remain to observe the rise or fall of the systolic pressure to estimate the condition of the individual. Another factor, however, enters into consideration. When the blood pressure tends to fall, the heart rate is accelerated. This is associated with a rise in pressure which masks the inefficiency of the splanchnic contraction. This is apparently a conservative mechanism in the nature of a second defence against a fall of blood pressure. Clearly, then, we must take into account the amount of acceleration of the heart as well as the rise or fall of blood pressures when we estimate the amount of relative failure of the splanchnic contraction."

The method of using the test is as follows: "The patient is directed to lie down flat upon a couch with no head rest. The armlet of the blood-pressure instrument is then placed around the upper arm. This should be arranged so that it bears the same relation to the heart lying as it will when the patient is standing, so that no hydrostatic error will be included. Absolute quiet is insisted upon, relaxation of the muscles is necessary, and all emotional disturbances should be guarded against. The pulse rate is then taken by quarter minutes for at least four successive quarters. These should be recorded until we arrive at a plateau in which the heart is steady, the indication of which may be taken to be the point where four records show no decrease. These four records forming a minute's record should be noted for comparison with the standing rate. Without releasing the grip on the radial artery, the systolic pressure should be taken.

"This should be taken twice, and if any large difference is noted, a third time, and the average struck. If there is any considerable variation noted, it may be due to several disturbing factors, such as an uncomfortable position, emotional disturbances, nervous muscular contractions, holding the breath, etc., all of which should be eliminated. These items recorded, the patient is allowed to stand and the same records taken in the same way with the same precautions.

"It is important that the pulse rate should be allowed to fall to its standing normal after rising, for it is accelerated by the muscular act of getting up. The blood pressure also rises considerably at first (though it may fall), but it strikes a balance as a rule a little before the pulse rate does. We may now compare our results and arrive at a conclusion as to the condition of the individual. The whole test takes less than five minutes.

"It is advisable at first to repeat the test and corroborate the findings of the first examination; with a little practice, however, a repetition is unnecessary."

A number of observations are recorded and an excellent bibliography is appended.

TREATMENT OF INFECTED OR SUSPICIOUS WOUNDS.

Bier's method of producing passive congestion in the treatment of acute inflammation has attracted much attention. P. L. Friedrich[2] now advocates Bier's method of treatment and abandons the attempt to control the process by chemical measures.

ASCENDING CURRENTS IN MUCOUS CANALS AND GLAND DUCTS, AND THEIR INFLUENCE ON INFECTION: A STUDY IN SURGICAL PATHOLOGY.

Charles John Bond,[3] in an address in surgery before the British Medical Association, has taken up the very interesting subject of the retrograde current in mucous canals. His paper illustrates the application of physiological observation to surgery. He cites instances in which the fecal stream had been diverted by the upward current, which was capable of carrying powdered indigo from the anus through the sigmoid flexure to the colotomy opening. In the female generative tract powdered indigo was introduced in certain cases in the os uteri before operation, and at operation was found in the tubes, even in the Fallopian tubes. Other examples were given of the similar action of foreign particles in the bile tract and in the urinary tract. He notes the possibility of the transfer of infections from the

[2] Die Behandlung infektionsverdächtiger und infizierter Wunden, einschliesslich der panaritialen, phlegmonösen, furunculösen Entzündungen (treatment of inflammations). Deutsche medizinische Wochenschrift, xxxi, No. 26.

[3] The Lancet, July 29, 1905, p. 275.

respiratory tract to the accessories, nasal cavities and the Eustachian tubes. The deduction to be drawn from the transfer of indigo particles is the possibility of infective organisms being conveyed through the same route. He states among his conclusions that he is inclined to think that in some cases more attention should be paid to mucous channels as routes of invasion rather than to the lymph or blood stream. He has spoken of the large share which such a mucous, as opposed to a blood infection, plays in the diseases of the female generative tract. The rapid ascent of the urethra by the non-motile gonococcus and the colonization of deeper portions of the tube, apart from direct extension of growth and in the absence of instrumentation and injection, are thus explained. The ascending infections of the kidney by way of the ureter can also be investigated from this point of view. Our knowledge of the causes which produce biliary and urinary calculi he considers still very incomplete. The facts which point to the importance of diseased conditions of the mucous linings of the excretory tubes in favoring the deposition of concretions are of especial importance from this point of view. And bearing in mind the proved transference of particles, under certain conditions, from duodenum to gall bladder and from urethra to ureter, the author hopes that further light may thus be thrown on these calculous diseases. In fact, the burden of his remarks points to the necessity for the active recognition of the importance of all communications between the efferent canals of the body and the external world, and thus accentuates the value of personal hygiene and true cleanliness.

ACID INTOXICATION AND LATE POISONOUS EFFECTS OF ANESTHETICS.

Bevan and Favill [4] have carefully reviewed the literature of the subject, have done some experimentation, and have reached, as a result of their clinical and laboratory work, the following conclusions:

1. Anesthetics, especially chloroform (ether to a very limited degree) can produce a destructive effect on the cells of the liver and kidneys and on the muscle cells of the heart and other muscles, resulting in fatty degeneration and necrosis, very similar to the effects produced in phosphorus poisoning.

2. The constant and most important injury done is that to the liver.

3. This injury to the liver cells is in direct proportion to the amount of the anesthetic employed and the length of the anesthesia.

4. Certain individuals exhibit an idiosyncrasy or a susceptibility to this form of poisoning which it is difficult to explain.

5. There are certain predisposing causes which favor this destructive effect of chloroform, among which are (*a*) age — the younger, the more susceptible; (*b*) causes which lower the general vitality of the individual and probably the vitality of the liver cells, such as diabetes, previous recent anesthesias, infections from pus germs, diphtheria, intoxications from a dead fetus in the uterus, a gangrenous mass in the abdominal cavity, etc.; (*c*) exhaustion due to hemorrhage; (*d*) exhaustion due to starvation; (*e*) exhaustion due to wasting diseases, such as carcinoma; (*f*) lesions which have resulted in extensive fatty degenerations, such as occur in the limbs in infantile paralysis; (*g*) chronic diseases involving both liver and kidney, such as cirrhosis and nephritis.

6. As a result of this fatty degeneration and necrosis of the liver cells, toxins are produced either from the liver cells themselves or as a result of the failure of these cells to eliminate substances which, under normal conditions, they eliminate, but which under these abnormal conditions they fail to do, and these substances, therefore, may accumulate and produce toxic effects.

7. These toxins produce a definite symptom-complex which makes its appearance from ten to one hundred and fifty hours after the anesthesia. This symptom-complex consists of vomiting, restlessness, delirium, convulsions, coma, Cheyne-Stokes respiration, cyanosis, icterus in varying degree, and usually terminates in death.

8. It is probable that milder degrees of this poisoning are recovered from, and that the transient icterus noticed after chloroform anesthesia, without other evident cause, is due to such poisoning, and many cases which exhibit restlessness, fright, mild delirium, drowsiness, etc., after anesthesia may be due to the same cause.

9. This disease is a hepatic toxemia, the toxins producing it hepatic toxins, and possibly the previous condition making its development easily possible should be described as liver insufficiency. Just as we have for a long time recognized a condition, uremia, in which we find arising from a variety of noxious agents, anesthetics, poisons, infections, pregnancy, etc., affecting the secreting cells of the kidney and preventing their normal function, a pathologic condition, accompanied with a certain definite symptom-complex, so we must now, we believe, recognize a condition involving the liver in which we find from a variety of noxious agents (anesthetics, poisons, infections, pregnancy, etc.), affecting the secreting cells of the liver and preventing their normal function, a pathologic condition which we must describe as hepatic toxemia, accompanied with a certain symptom-complex, and showing certain changes post-mortem.

We believe that the condition of acute fatty degeneration of the liver with resulting hepatic toxemia is as definite a pathologic entity as is acute pancreatitis with fat necrosis.

10. As by-products in this toxemia, but not as the essential poisons, are found acetone, diacetic acid and beta-oxybutric acid in the blood and urine.

11. Post-mortem reveals fatty degeneration of the liver, fatty degeneration and mild degree of inflammation of the kidneys, and, in extreme

[4] Journal of the American Medical Association, Sept. 2, 1905, p. 691; Sept. 9, 1905, p. 754.

cases, fatty degeneration of heart and other muscles. The lesion of the liver, we believe, to be the overshadowing and important one, and the one which is responsible for the symptoms and fatal result. The injury to the liver, in some cases, is so great as to result in practically a total destruction of the organ.

12. Somewhat similar hepatic toxemias resulting from fatty degeneration of the liver cells occur in other conditions, and are accompanied with very similar symptoms, in such conditions as phosphorus poisoning, diabetes, puerperal eclampsia, acute yellow atrophy of the liver.

13. This fatty degeneration of the liver with hepatic toxemia following anesthesia is almost invariably due to chloroform in the fatal cases. Ether is seldom the cause of a death of this kind.

14. This serious and even fatal late effect of chloroform which has heretofore not been generally recognized must still further limit the use of this powerful and dangerous agent.

15. The possibility of the development of hepatic toxemia makes chloroform distinctly contra-indicated in those cases in which there exist the conditions which seem to favor its development, *i. e.*, diabetes, sepsis, starvation, hemorrhage, the presence of intoxication from dead material, the presence of fatty degenerations, as already cited, after infantile paralysis, and lesions of the liver. The susceptibility of children to this hepatic toxemia must be recognized. That chloroform is capable of producing these serious late poisonous effects is a strong argument against its employment, and an argument in the favor of more general use of ether; and yet we are confronted at times with the Charybdis of ether pneumonia, on the one hand, and the Scylla of chloroform hepatic toxemia on the other.

16. The recognition of this danger of hepatic toxemia is a strong argument against the employment of chloroform for long anesthesia, as it can be shown that a two-hour chloroform anesthesia is almost invariably fatal to rabbits and guinea-pigs, from fatty degeneration and necrosis of the liver cells, and a two-hour chloroform anesthesia in man is an exceedingly dangerous thing.

17. These facts in regard to the late poisonous effects of anesthetics and the fact that the dangers increase with the amount of the drug employed, and with the length of the anesthesia, form a strong argument in favor of rapid operating and in favor of limiting in every way possible the length of the anesthesia and the dose of the anesthetic. For example, time-consuming preparations of the patient should be made before, not after, anesthesia. In the light of this present knowledge, no surgeon can claim, as some have in the past, that after the patient is once asleep, it makes no difference whether it requires one hour or two hours for the doing of an operation. In the light of this knowledge, for instance, three-hour breast amputations with the unnecessary ligation of fifty vessels, becomes bad surgery.

18. This problem seems to us a very important one and worthy of the most careful study and research. At present we are practically limited to chloroform and ether as general anesthetics. Each has its danger; each has its special field in which one is safer than the other. We have, as a rule, heretofore employed chloroform in cases in which there was a previous lung or kidney lesion, and in children, with the idea that it was less likely to produce nephritis and pneumonia, and have used ether in the bulk of our work and felt that it was specially to be selected in heart lesions. We must now add new limitations, and attempt to determine by previous examination whether there is what might be called hepatic insufficiency, the conditions present which favor the development of the late poisonous effect of chloroform on the liver. Another way of solving this problem would be the discovery of new anesthetic agents, which do not carry with them these poisonous effects, or the employment of the present anesthetic in such a way as to avoid these dangers.

The reader is referred to a paper on "Aciduria (Acetonuria) as the Cause of Deaths following the Administration of Chloroform and Ether," by Leonard G. Guthrie, M.D.,[5] and also to a paper entitled "Aciduria (Acetonuria) Associated with Death after Anesthesia," by Drs. E. G. Brackett, J. S. Stone and H. C. Low.[6]

(To be continued.)

Reports of Societies.

AMERICAN PUBLIC HEALTH ASSOCIATION.

PROCEEDINGS OF THE THIRTY-THIRD ANNUAL MEETING, HELD IN BOSTON, MASS., SEPT. 25, 26, 27, 28 AND 29, 1905.

THE Association convened in the Hall of the Y. M. C. A., under the Presidency of DR. F. F. WESBROOK, of Minneapolis, Minn.

Addresses of welcome were delivered by ATTORNEY-GENERAL HERBERT F. PARKER on behalf of the State, and by DR. SAMUEL H. DURGIN on behalf of the city of Boston.

EXPERIMENTS ON THE PURIFICATION OF BOSTON SEWAGE DURING THE YEARS 1903–5.

MR. C. E. A. WINSLOW and MR. EARL B. PHELPS, Boston, read a paper on this subject.

Under the conditions of their experiments, crude Boston sewage has been successfully filtered through a two-foot bed of sand, having an effective size of .12 mm., at a rate of .4 million gallons per acre per day, divided into four doses in the twenty-four hours. Their sand effluents were bright, clear and well purified. The depth of the beds cannot safely be reduced below two feet. Preliminary septic treatment for twelve and twenty-four hours does not improve the effluents obtained by sand filtration, although it makes the care of the surface of the beds somewhat easier.

Crude Boston sewage may be treated on single contact beds of fine stone (one-half inch diameter) at a rate of about 1.2 million gallons per acre per day. The effluent, though only partially purified, is generally stable and could be discharged into water without any tendency to create a nuisance. The beds clog rapidly, and th. surface needs much attention. A more prac-

[5] The Lancet, Aug. 26, 1905, p. 583.
[6] BOSTON MEDICAL AND SURGICAL JOURNAL, July 7, 1904.

tical process is the treatment by the double contact system, in primary beds of two-inch material and secondary beds of half-inch material. Such a combination yields a fairly well purified and stable effluent at a rate, on the combined double system, of about .7 million gallons per acre per day with beds six feet deep. Such a system does not clog seriously. Primary beds slowly decrease in capacity, but a portion of the loss may be made good by resting for a period. Preliminary septic treatment enables the beds to maintain a higher capacity, but produces an effluent so difficult to purify that their efficiency is interfered with.

The most practical method of those which they have studied appears to be the treatment of crude sewage in double contact beds. The trickling filter remains to be studied. They purpose to continue their work by an investigation of this process during the coming year. For this end a pair of outdoor trickling beds, each 100 square feet in area, have been installed at the station and equipped with a distribution device of an original design.

INDUSTRIAL WASTES AND THEIR SANITARY SIGNIFICANCE.

MR. MARSHALL O. LEIGHTON, Washington, D. C., read this paper.

Although the study of trades wastes has for many years occupied a prominent place in industrial development, the efforts have been directed toward the economical recovery of valuable ingredients rather than the treatment of objectionable polluting materials. So successfully has this work been conducted that there are some industries in which the by-products have become more important from a financial point of view than the original product. The investigations which have been thus successful have usually terminated when the prime object of the work has been accomplished, and not infrequently the by-product wastes are as objectionable as the original wastes. At all events, if the result has been of benefit to streams and decreased dangerous pollution, it has often been a matter of chance rather than intention.

Among sanitary investigators the disposal of trades wastes has occupied in this country, a position secondary to that of sewage disposal. There have been a few investigations such as the classic work of Kinnicutt and Eddy upon acid iron wastes, the investigations of the Massachusetts State Board of Health and the United States Geological Survey, but the fact remains that when a body of sanitarians enters into a consideration of polluting wastes, it is accepted as a matter of course that city sewage is the subject for discussion. Yet the problems afforded by trades wastes are often extremely complex, and the study thereof should not be ignored. They classified such wastes as follows:

1. Those which are putrescible or which induce putrescibility.

2. Those which inhibit the reduction or oxidation of putrescible substances or prevent the working of those natural processes by which organic matter is changed to inorganic.

3. Those which appear to be indifferent to chemical changes but which silt up streams and produce obstructions.

While it is true that probably no industrial waste contains the germs of any disease, and therefore, from a purely pathogenic standpoint, the relation to sanitation is remote, there are several considerations to be borne in mind which render the subject of prime concern to a public health association. Unstable organic wastes such as distillery slops, sulphite pulp liquors, soap liquors and creamery effluents all produce a condition of putrescibility in streams. While this may not, of itself, be a menace to health, it is certainly included among those reprehensible features common to modern civilization, which have been turned over to the sanitarian for treatment. It may also be claimed that as a large proportion of this organic matter is nitrogenous it provides food for bacteria and, therefore, the specific germs of water-borne diseases introduced by sewerage systems during longer periods, and thereby extend their baneful influence beyond that at which they would normally remain virulent. Such wastes, too, when discharged in large quantities increase the burden of water filtration systems and in some cases render them inefficient. In other words, these highly organic wastes are detrimental to rivers from practically all sanitary and economic standpoints.

If sanitarians would be truly successful in their efforts to purify streams they must give their attention to the subject of industrial wastes, and study them with the object of recovering valuable by-products. In so doing they will enlist the co-operation of the commercial and industrial world which finally and inevitably controls the situation.

THE POLLUTION OF SHELLFISH.

MR. GEORGE A. SOPER, Ph.D., New York City, stated that the fact that typhoid fever may be caused by eating oysters and other shellfish which have been grown or immersed in sewage-polluted water, although well established, is not known as generally as the importance of the subject warrants. The shellfish industries on the American coast are enormous in extent and value. In some places grave sanitary evils occur. With little exception there is no sanitary supervision over any part of the business of collecting, handling and selling the shellfish. Extensive reforms should be initiated if the public is to be protected against the transmission of typhoid and other enteric diseases which are now disseminated in this way, and the interests of the fishermen and others engaged in the shellfish industry are not to be unnecessarily jeopardized. The nature of these reforms is not a matter of question so much as the method of bringing them about. The remedy proposed is a careful study of the conditions and a wide publication of the principles upon which the corrective measures must be based and applied.

SANITARY ANALYSIS VERSUS SANITARY INSPECTION.

MR. R. B. DOLE, U. S. Geological Survey, Washington, D. C., said the object of the paper is to draw more general attention to the value of sanitary survey in regions where the potability of water is in question. The writer endeavors to show that detailed local information generally determines the potability of water better than the data afforded by present analytical methods; that, therefore, boards of health should discontinue the examination of samples of water except those collected in their own study of specific water problems; that funds for water investigation may profitably be expended in the collection of data regarding the natural conditions and industrial and municipal developments which aid in the consideration of water-supply problems. Analytical results and other illustrative material are quoted from a recent investigation of surface waters in Minnesota, conducted jointly by the U. S. Geological Survey and the Minnesota State Board of Health.

COPPER SULPHATE IN PUBLIC WATER SUPPLIES.

MR. H. W. CLARK, Boston, dealt with some aspects of the use of copper sulphate in public water supplies. Experiments to test the bactericidal action of copper were made at the Lawrence Experiment Station. Comparing the action of other metals with copper, he finds that the bacteria increase more and decrease slower when in contact with copper than when in contact with

tin, lead, zinc, iron or aluminum. The effectiveness of the metals in destroying bacillus coli appears to be zinc, iron, copper, tin, aluminum and lead, in the order named, with tin and aluminum ranking copper in one one experiment.

PRESIDENT'S ADDRESS.

The PRESIDENT, DR. F. F. WESBROOK, Minneapolis, Minn., said that in America two causes are operative in rendering it difficult to protect the health of the public, one of which is the lack of real knowledge on the part of the public in regard to the scientific truths which underlie the conservation of its chiefest asset, namely, its health, and the other is a tendency in the preservation of individual freedom to lose sight of our obligations to respect the rights and privileges of others who may be less assertive.

President Wesbrook discussed a number of things in his address, which was replete with excellent suggestions looking toward the expansion and betterment of the Association.

The older method of securing experience by experimentation on the public should be superseded by requiring preliminary special training at universities and by boards of health, so that while retaining for the good of the public the service of those already trained and competent, they may be reinforced and, when necessary, succeeded by those who have received such special training.

Knowledge of the clinical manifestations of disease is important, but often much more than clinical experience and ability is essential. While in scarlet fever, smallpox and certain of the infectious diseases it is nearly always possible to diagnosticate the condition present, and by so doing protect others from infection, there are a number of diseases in which clinical observation alone proves utterly insufficient. As illustrating this he mentioned diphtheria.

The policy of the Association should be to anticipate demands for special work and special information along the lines which are closely applicable to public health, and care must be taken that with so many societies the members do not lose interest because they have failed to provide a place and a stimulus for workers in all lines which directly affect the work of the Association.

EXPERIMENTS ON THE STORAGE OF TYPHOID INFECTED WATER IN CANTEENS.

MR. EARL B. PHELPS, Boston, Mass., read a paper on this subject, in which he drew the following conclusions:

"In practically all the experiments a number of typhoid organisms lived through the twenty-four hours. Studies on the progressive killing of the organisms showed it to be rapid at first, decreasing rapidly toward the end of the period. The indications are that the surviving organisms are hardy, and would not be entirely killed by a much longer exposure.

"The efficiency of the canteen falls off rapidly when in continuous use even with a comparatively soft water. The value of the canteen in actual practice would, therefore, be conditioned upon its being frequently cleaned, preferably with oxalic acid, a practice which would doubtless be neglected in actual field or camp service.

"The value of the canteen as a disinfecting agent is seriously affected by clay in the water, and is practically destroyed by the use of waters high in alkaline carbonates."

PATHOLOGY AND PATHOGENESIS OF SMALLPOX.

DR. W. T. COUNCILMAN, Boston, presented a general consideration of the pathology and pathogenesis of this disease. He discussed the cause, mode of infection, mode of production of exanthema, immunity, secondary infections and concluded with an experimental study of smallpox in monkeys.

THE PATHOLOGY AND ETIOLOGY OF HUMAN VACCINIA.

DR. WM. T. HOWARD, JR., Cleveland, Ohio, discussed this subject under three heads:

1. *Material and methods.* — The material upon which this study is based consisted of twenty-three pieces of skin excised from successful vaccinations on twelve men, each of whom was vaccinated in three places at the same time. The vaccinated areas were excised at various periods from forty-eight to one hundred and sixty-eight hours after vaccination. As controls, skin was also excised from three unsuccessful vaccinations. The skin was fixed in Zenker's fluid, cut in paraffine, and sections were stained by various methods, eosine and methylene blue and Borrell's stain giving the best results.

2. *Pathology.* — The skin lesions of vaccinia closely resemble those of variola, but are in general rapider and surer.

Contrary to the current belief, destruction of the epidermis and the formation of the vesicle are well-nigh complete in forty-eight hours after vaccination. The vesicle at this stage is composed of a reticular meshwork of coarser and finer strands of a hyaline fibrinoid material, formed from degenerated epithelial cells. The meshes of the reticulum contain fluid and fine, granular material, and but few cells. Swelling and reticular regeneration comprise the earliest cytoplasmic changes. Later, larger and smaller hyaline droplets appear and the cells are transformed into hyaline fibrinoid material. Invasion of one epithelial cell by another, a conspicuous occurrence in vaccinia of the rabbit's cornea, is also seen here.

Nuclear degeneration is marked and takes several forms, the earliest being (1) swelling with increased prominence of the reticulum, (2) massing of the chromatin in the center and along the nuclear rim, and (3) wrinkling and retraction of the nuclear rim. Later, the nuclei become condensed and shriveled, and often fragment, with the dispersion of chromatin dust in the cytoplasm and intercellular spaces.

Comparatively few blood corpuscles are found in the epidermis at this stage. The internal changes in the corium consist of edema, leucocytic infiltration and swelling and proliferation of endothelium of the blood and lymph vessels. These changes are much more marked than in the corresponding stage of variola.

In the seventy-two-hour lesion all the epithelial cells below the horny layer are necrotic or have disappeared. The spaces of the reticulum are smaller and the strands coarser. In the mid and deeper parts of the lesion fibrin and leucocytes are prominent. The leucocytes are of the large and smaller mononuclear and eosinophilic types. On each side of the original vesicle, early secondary vesicles (analogous to those occurring at the margins of the variola vesicle) are conspicuous. Here the earliest changes in the epithelium may be traced; they are identical with those seen at the margins of the forty-eight-hour lesion. The changes in the corium are still more intense.

From seventy-two hours on, the chief additional changes are, (1) condensation of the reticulum into a dense, hyaline material, containing broken-down leucocytes, (2) further necrosis of epithelial cells at the margins of the primary vesicle, and (3) persistence of the inflammatory changes in the corium.

The scab or crust is formed by the condensation of the reticulum and exudate of the vesicle. It is thrown off on the renewal of the epidermis, the cells of which proliferate at the margins of the lesion and push their way under the scab.

3. *Etiology of vaccinia.* — No bacteria were found in any of the lesions. There were found in the early lesions structures corresponding to the primary cytoplasmic stage of cytoryctes variolæ, as described by Councilman and his co-workers and by Howard and Perkins in the early stages of variola and by Tyzzer in vaccinia of the calf and rabbit. There was entire absence of the secondary cytoplasmic and the intranuclear stages of cytoryctes variolæ, which is in accord with Tyzzer's experience in vaccinia of the calf and rabbit. Therefore, we believe that vaccinia of man, the calf and the rabbit is caused by the primary cytoplasmic stage of cytoryctes variolæ, which is to be regarded as the asexual cycle of this organism.

FURTHER EXPERIMENTS WITH VACCINE VIRUS.

DR. W. F. ELGIN, Glenolden, Pa., discussed this subject under six heads:

1. *Dating of commercial vaccine.* — Experiments are recorded indicating the number of days commercial virus will remain active at various seasons of the year. From these experiments it is noted:

First, that winter vaccine may be expected to remain active for one hundred and twenty-five days.

Second, that this period shortens as the weather gets warmer.

Third, that a temperature above 70° hastens the destruction of virus, so that summer vaccine can only be expected to remain active for a short time.

2. *Vaccine in cold storage.* — This section deals with the preparation of glycerinated virus and its immediate storage at a temperature of from 13° to 15° C.; and shows that it not only remains active for a long period at this temperature, but when removed after a storage of several months it will stand practically the same conditions as to change of temperature as that noted in control virus removed from the animal at the time the stored virus is taken from cold storage.

This will allow of the preparation of vaccine during the cold weather, and its storage for summer distribution; so that vaccine plants may close down during the extreme heat.

3. *Comparison of bulk vaccine and single vaccinations stored under similar conditions.* — The experiments detailed under this section are for the purpose of determining whether vaccine prepared in a finished package of single vaccinations deteriorates more rapidly than virus in bulk while stored in cold, as noted in the previous section.

The tests indicated that the virus contained in the capillary tubes remains active practically as long as the same virus in bulk, while a slight deterioration is noted in the glycerinated vaccine on points.

4. *Comparison of normal vaccine with that taken from the deeper skin layers.* — These experiments were made to determine the comparative value of the *base*, or that part of the vesicle remaining after the normal or usual vaccine tissue has been removed. Comparative tests on animals seem to indicate that the "life" of the deeper layer is very nearly if not quite the same as that of the normal virus; while the bacteria are decidedly fewer in number and more restricted in character.

5 *Toluol.* — Attention is called to Dr. Carini's experiment in the purification of vaccine virus by means of this substance; and experiments and results noted showing that, when mixed with virus as ordinarily prepared, it destroys the non-spore forming germ-life in from four to six days, without apparently affecting the activity of the virus.

If further experiments confirm these findings, it is thought this method will be valuable in the rapid preparation of a germ-free vaccine.

6. *Conclusion.* — Attention is called here to two important questions in connection with the production of vaccine virus, — *purity* and *potency*. It is shown that, up to the present time, no sure method has been universally accepted which will accomplish both in virus prepared for general distribution.

Attention is called to the fact that many of the laboratories, particularly those under state control in this country and abroad, have practically given up bacteriological control as a routine procedure. The question that was propounded to this Association last year is again emphasized, as to "How far we are justified in clearing vaccine of bacteria at the expense of its potency?"

(To be continued.)

MAINE MEDICAL ASSOCIATION.

THE fifty-third annual meeting was held in the Common Council Chamber, City Building, Portland, on Wednesday, Thursday and Friday, June 7, 8 and 9, 1905.

The meeting was presided over by the President, DR. FRED L. DIXON, of Denver, Colo. During the past year, Dr. Dixon, who at the time of his election was a resident of Lewiston, moved to Denver, Colo., and made the trip east in order to be present at the meeting. In addition to the literary and scientific features of the program, considerable business of importance was taken up and the attendance at the sessions was unusually large.

The principal matter of business was the proposed Reorganization Plan of the American Medical Association, and a large part of one session was devoted to its consideration, without final action being taken. This was the third time that the proposed Reorganization Plan had been considered at the annual meetings and it assumed such shape that it will be brought to vote at the meeting in 1906.

While powerful arguments were made for and against the plan, the general attitude of the members was that of indifference, and apparently considerable ignorance prevailed as to just what the effect of its adoption would be.

MORNING SESSION, WEDNESDAY, JUNE 7.

After the usual routine business the essayists presented their papers, the first of which was by DR. BENJAMIN F. MAKEPEACE, of Farmington, on

DIPHTHERIA AND PHARYNGITIS, AND THEIR DEMANDS FOR A CORRECT DIAGNOSIS.

Dr. Makepeace considered the causes, differential diagnosis, bacteriological examination and forms of treatment. The paper was discussed by Drs. Fred L. Dixon, M. C. Sawyer, Pierce E. Somers, S. C. Gordon, Eben J. Marston and Addison S. Thayer, who favored the modern treatment of diphtheria, though differing somewhat as regards details. DR. A. PALMER DUDLEY, of New York, said: "That the poison of diphtheria was systemic, the manifestations local and that the latter might appear elsewhere than on the tonsils." He believed that death came from failure of the heart and kidneys and that antitoxin could not always be relied upon, but that salt solution intravenously or otherwise was the better antidote for the poison.

DR. H. H. PURINTON, of Lewiston, read a paper on

VESICAL FISTULA,

and described his chosen method of operating. Dr. Purinton favored a funnel-shaped denudation, and the use of silkworm-gut sutures, but advised against the retention catheter in the after treatment. The paper

was discussed by Dr. S. C. Gordon and Dr. P. H. Ingalls, of Hartford, Conn.

DR. WALLACE E. WEBBER, of Lewiston, reported a case diagnosed as smallpox, about which considerable doubt existed. The case was discussed by Dr. A. L. Stanwood, of Rumford Falls.

AFTERNOON SESSION.

The President, DR. F. L. DIXON, delivered his Address in which he referred to the work of the Association and its committees and considered the matters of public water supply, epidemics, compulsory vaccination and venereal diseases.

DR. S. C. GORDON, of Portland, reported as chairman of the committee on reorganization in accordance with the plan proposed by the American Medical Association. The report was substantially the same as that of last year and the committee again urged the immediate adoption of the plan.

The report was received but not accepted, and DR. J. M. MACCORMACK of the Organization Committee of the American Medical Association was invited to express his views. Dr. MacCormack spoke at some length, telling of the deplorable condition of the medical profession in many parts of the country, due to an absence of harmony and unity. The American Medical Association was necessary as a bond of union, but of itself could do very little for the individual doctors in the counties of Maine. He spoke of certain abuses and told how the physicians in charge of government departments are limited and restricted as regards authority, politics entering into the matter to such an extent that even the President is powerless to give the heads of these departments a "square deal." He spoke of the favorable conditions in Alabama, due to the almost perfect organization in that state, and believed it desirable that physicians take up the subject of legislation.

By the new plan, the State Association loses nothing, and in states where the plan has been adopted there has been a distinct gain in membership, as in Kentucky, Michigan, Texas and North Carolina. He believed it to be the duty of the Association to put its hands under the submerged element of the profession and uplift it. Reciprocity between state boards of registration will be brought about, a national directory will be issued and great good will result to the profession.

Dr. MacCormack said that Maine and Virginia were the only states that had not adopted the plan and suggested that the report go back to the committee, enlarged by the addition of members of county societies.

DR. FREDERICK H. GERRISH said in part:

"The other side of this question (for there is another side) deserves presentation. I believe heartily in the value of harmony in the profession; but there is such a thing as paying too high a price even for as good a thing as harmony. If the proposed plan is adopted immediately without modification, the Association will soon find itself in a condition of great confusion. Like others, I received a copy of the constitution and by-laws which are presented by the national society, and which we are urged to adopt as the best way of carrying out the new plan. I read a paper on the subject at the county association meeting; and as I have not heard of objections being raised by anybody else, I suppose that the committee refers to me in its contemptuous reference to those who find fault with phraseology and other trivial matters. It does not seem to me that criticism is captious that calls attention to inconsistencies and other blemishes of construction. Our present plan is good: under it we have accomplished many admirable things — almost every good thing in the medical line that has been done in this state has been started and promoted by this Association. Furthermore, we are entitled now to a member of the house of delegates in the American Association, and thus can participate in all the good work of that society.

"The time to which I am entitled in this discussion does not permit me to enter into details and, therefore, I can hardly do more than mention some of the conspicuous faults in the constitution and by-laws which we are urged to substitute for those under which we work so well."

"The establishment of a journal (Art. xiv), in place of our annual transactions, is, at best, of doubtful expediency, as are also the union of two or more county societies to form a compound county society, as distinguished from a district society (ch. vii, sect. 4); the effort to include in our membership '*every* qualified physician' — provided that this refers to the qualification given by state registration (ch. vii, sect. 10); the statement that every reputable and legally registered physician, not an exclusionist, 'shall be *entitled* to membership' (ch. vii, sect. 5).

"The number of delegates necessary for a quorum (ch. iv, sect. 3), and, also, the number of members essential for a petition for a special meeting (ch. ii, sect. 2) far exceeds what would be practicable with us. The inequality of representation in the house of delegates (ch. iv, sect. 2) is most unjust, Cumberland County, with 137 members having no more votes than Waldo, with a membership of only six.

"The fact is that our members have not to any extent felt interest enough to inform themselves in the premises. Even the committee shows a marked confusion of ideas in presenting as an evidence of intelligent interest in the subject, the resolution of the Penobscot County Society, asking for a charter from this Association; for the essence of the plan of the American Medical Association is that the county society is the unit, that by the union of county societies the state association is formed, and by the union of the state associations the national is constituted. The resolution plainly shows that the Penobscot society has missed the main point. We need to take plenty of time to discuss the matter, and have everybody concerned fully instructed."

It was voted that the Reorganization Committee be enlarged by the addition of a new member from each county and instructed to report before the close of the annual meeting.

DR. WALTER E. ELWELL, of Togus, read the report of the Committee on Legislation

REGARDING THE VICTIMS OF DRUG HABITS.

The report included the reading of a new law adopted at the last session of the Legislature through the efforts of the committee.

DR. H. E. MILLIKEN, of Waterville, read a paper on

POST-MORTEM EXAMINATIONS,

in which he considered the value of such examinations from a medico-legal standpoint and laid special stress on their educational value when performed by a physician in his private practice. Dr. Alfred King said in the discussion that he believed that we should make post mortems in doubtful or unusual cases in our own practice. Experience gained in this way is much more valuable than that obtained by watching postmortems in large schools and hospitals. We need in this state a change in the law as regards coroners. They should be medical men, because points arise, regarding which laymen, however intelligent, cannot possibly have a correct understanding.

Dr. Ewen Smith, of Portland, read a paper on

URANO-STAPHYLORRHAPHY

and showed drawings and models illustrating the methods considered.

Dr. B. F. Parker, of Bath, read a paper on

PERSONALITY AS A REMEDIAL MEASURE.

At the evening session, Dr. Chauncey R. Burr, of Portland, read a paper on

THE SIGNIFICANCE OF MEMBRANOUS COLITIS.

The session then adjourned to City Hall where Dr. John C. Bowker of Lawrence, Mass., gave an illustrated lecture on Russia and Japan.

Second Day — Morning Session.

Dr. Wallace E. Webber, of Lewiston, read a paper on

TETANUS,

in which he considered in particular, post-operative tetanus. His conclusion, based on the study of several cases was, that the infection was probably due to infected catgut. This paper was most freely discussed and Drs. S. H. Weeks and A. S. Gilson in the course of their remarks expressed their belief in the dust of the room as the carrier of the tetanus germs into the wound.

Dr. Herbert F. Twitchell, of Portland, read a paper on

PRELIMINARY ANESTHESIA WITH ETHER SEQUENCE.

and exhibited a new inhaler designed by him in which the ether anesthesia was to be preceded by that of ethyl chloride.

Dr. Alfred King, as Secretary of the Enlarged Reorganization Committee, stated that the proposed constitution had been compared with the present one, and a constitution drafted that would conform in a general way with that offered by the American Medical Association.

Voted, That the modified constitution be published in the *Transactions of the Association*, and that a copy thereof be also mailed to each member with the program of the annual meeting.

Dr. Geo. A. Phillips, of Bar Harbor, read a paper on

THE UNCERTAINTIES OF MEDICINE — THEIR LESSONS.

Second Day — Afternoon Session.

Dr. F. J. Robinson read the report of the visitors to the Eastern Maine Insane Hospital.

The following officers were elected: President, Dr. R. D. Bibber, Bath; First Vice-President, Dr. Chas. D. Smith, Portland; Second Vice-President, Dr. Daniel W. Hayes, Henderson; Secretary, Dr. Walter E. Tobie, Portland; Treasurer, Dr. Arthur S. Gilson, Portland.

Dr. Walter E. Tobie read the report of the Necrologist, in which seven deaths were recorded.

Dr. Chas. B. Witherle, of Portland, read a paper on

CEREBRAL ARTERIO-SCLEROSIS,

dealing specially with the minor or incipient forms of this disease, which may or may not be accompanied with recognizable signs of arterio-sclerosis elsewhere. Dr. Witherle expressed the belief that there were two varieties of this disease — one which begins at about thirty or forty years and may tend to apoplexy, and a senile form in which the prognosis was not necessarily bad.

Dr. E. H. Bennett, of Lubec, read a paper on

THE NECESSITY OF COUNTY SANATORIA FOR THE TREATMENT OF TUBERCULOSIS.

On motion of Dr. S. C. Gordon, it was

Voted, That a committee of three be appointed from the Association to confer with the various counties in forming county and district associations, in accordance with the plan outlined by the Committee on Reorganization. The members appointed to serve on this committee were Drs. S. C. Gordon, Alfred King and F. C. Thayer.

Second Day — Evening Session.

This session was held at Riverton immediately following the Annual Banquet.

The Oration was delivered by Dr. Chas. Jewett, of Brooklyn, N. Y., who took for his subject,

THE MECHANICS OF THE PELVIC FLOOR IN RELATION TO OBSTETRIC INJURIES AND THEIR REPAIR.

Dr. Jewett considered the anatomy of the pelvic floor and called attention to the investigations of Browning and Campbell which show that the levator ani fibers are in parallel bundles which do not decussate in the median raphe. In summarizing his statements he said:

"The pelvic floor is essentially a muscular diaphragm.

"The muscles of the floor are disposed in two distinct layers.

"These layers are separated by the plane of the hymen.

"The uppermost layer is the levator ani.

"The trend of the levator fibers is toward the coccyx.

"The rectum and the perineal body are in relation with the median borders of the levator muscles.

"The tubular viscera are slung in the pelvis mainly by the levator attachment to the rectum and the perineal body.

"The attachment of the levator to the rectum is almost wholly aponeurotic or fascial.

"The essential part of the obstetric injury is the rupture of these fascial attachments behind the vaginal sulcus and alongside the rectum.

"The most important object of the reparative operation is to restore these fascial attachments.

"This is best effected by the technique of Emmet."

The closing session was held in the morning of the third day and was devoted entirely to business. It was voted that the next annual meeting be held in Portland, on the first Wednesday, Thursday and Friday of June, 1906.

Recent Literature.

The Meaning of a Modern Hospital. By Bruce Clarke, M.A., M.B. (Oxon.), F.R.C.S., Surgeon to St. Bartholomew's Hospital. New York, London and Bombay: Longmans, Green & Co. 1904.

This brochure is the outcome of an address delivered before the Abernethian Society of St. Bartholomew's Hospital. As the result of various inquiries made after the delivery of the address, the author has enlarged his remarks and added a diagram, making a small pamphlet of forty-seven pages. The subject matter is systematically presented under many headings, and is a useful presentation of a subject about which all physicians should know something.

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SIR THOMAS BROWNE.

IT should be a matter of wide medical interest that on Oct. 19 the three hundredth anniversary of the birth of Sir Thomas Browne was celebrated at Norwich, England, the city with which his name is chiefly associated. A statue was unveiled and a memorial service held in the church of which he was a member and in which he was buried. His remains are still there, with the exception of his skull, which is preserved in the museum of the Norwich Hospital, the coffin having been accidentally broken into by a workman. It is a curious circumstance that Oct. 19 was both the date of his birth and also of his death. He died in 1682, having just completed his seventy-seventh year.

On the 12th of October Dr. Osler delivered an address on Sir Thomas Browne and His Works before the Pupils' Physical Society of Guy's Hospital. Those who have known anything of Dr. Osler's literary tendencies are well aware of his great admiration for Sir Thomas Browne as a man, and particularly for his most notable literary work, the "Religio Medici." It was, therefore, a peculiarly happy circumstance that his first address since his arrival in England, outside the confines of Oxford, should have been given on this subject and before students of Guy's Hospital, an institution in which he has always manifested particular interest. The address, published in the issue of the *British Medical Journal* for Oct. 21, gives an excellent sketch of the man from his earliest years to the end of his long career. More interesting than this was his discussion of the "Religio Medici." Few men are better able to discuss both the history and the literary merits of this book than Dr. Osler. He has through many years collected its various editions, together with the other works of the author, and these books he showed his audience, finally presenting the library of the hospital with a complete edition of his works. The extraordinary popularity of the "Religio Medici" is shown by the fact that in the seventeenth century there were in all twenty-two editions; in the eighteenth century there were four English editions, one Latin and one German. Thereafter they appeared with less frequency, until in 1881 appeared what Dr. Osler regards as the standard edition, edited by Dr. Greenhill of the "Golden Treasury Series," and reprinted by Macmillan & Co. Edmund Gosse links Simon Wilkin's edition with that of Greenhill, and thinks that Browne was particularly fortunate in having these two men among his editors. Wilkin was a paper maker and then a printer in Norwich. Greenhill, an Oxford man, was a physician and a scholar like Browne himself.

Dr. Osler's comments on the literary value of Sir Thomas Browne's works are worthy of close attention and are full of the characteristic sentiments with which we have become familiar. Finally, he concludes his address with the following words of advice to his student audience:

"For you, young men, the writings of Sir Thomas Browne have a very positive value. The charm of high thoughts clad in beautiful language may win some of you to a love of good literature, but beyond this is a still greater advantage. Like the 'Thoughts of Marcus Aurelius' and the 'Enchiridion' of Epictetus, the 'Religio' is full of counsels of perfection which appeal to the mind of youth, still plastic and unhardened by contact with the world. Carefully studied, from such books come subtle influences which give stability to character and help to give a man a sane outlook on the complex problems of life. Sealed early of this tribe of authors, a student takes with him, as *compagnons de voyage*, life-long friends whose thoughts become his thoughts and whose ways become his ways. Mastery of self, conscientious devotion to duty, deep human interest in human beings — these best of all lessons you must learn now or never; and these are some of the lessons you may glean from the life and from the lips of Sir Thomas Browne."

A new life of Sir Thomas Browne by Edmund Gosse has just made its timely appearance in the "English Men of Letter Series" (Macmillan). It gives a concise account of the author's career and in several chapters discusses with some care

his principal writings and the conditions under which they were conceived. Gosse considers that in regard to the burning question of witches, Browne had advanced no whit ahead of his fierce and ignorant contemporaries, doubting neither the existence nor the malign action of the evil spirits and confessing in his "Religio Medici" to an implicit faith in prodigies, in prognostics, in short, in a whole world of superstition with regard to which it is impossible to say that he was in any sense ahead of his time. Dr. John Knott of Dublin has contributed to the *British Medical Journal* of Oct. 14 and 21 a communication, with the object of modifying the present tendency to condemn Sir Thomas Browne on account of his expressed belief in witchcraft and his relation to the trial of two unfortunate women condemned in 1664 for practising the same, and of furnishing sufficient material for the formation of an unbiased opinion regarding the claims of the author of the "Religio Medici" on the homage of professional posterity.

Had the good physician of Norwich lived at the present time, we feel assured he would certainly have favored cremation. In section 40 of the "Religio," he tells us: "I am naturally bashful, nor have conversation, age, or travel been able to effront or enharden me; yet I have one part of modesty which I have seldom discovered in another, that is (to speak truly), I am not so much afraid of death as ashamed thereof; 'tis the very disgrace and ignominy of our natures that in a moment can so disfigure us that our nearest friends, wife and children stand afraid and start at us. The birds and beasts of the field, that before in a natural fear obeyed us, forgetting all allegiance, begin to prey upon us. This very conceit hath, in a tempest, disposed and left me willing to be swallowed up in the abyss of waters, wherein I had perished unseen, unpitied, without wondering eyes, tears of pity, lectures of mortality, and none had said, '*Quantum mutatus ad illo!*' Not that I am ashamed of the anatomy of my parts, or can accuse nature of playing the bungler in any part of me, or my own vicious life for contracting any shameful disease upon me, whereby I might not call myself as wholesome a morsel for the worms as any."

Gosse considers that the spacious music of Browne's style is best exhibited in his little treatise on "Urn-Burial" and that it rises to its height in part of the fifth chapter where the genius of Browne reveals itself in its fullest splendor. He exhibits in various ways a most grotesque solicitude with regard to the actual substance of the human body and the separate parts of it after death, and it was probably this uncanny interest which led to his discovery of the substance called adipocere. Browne was fond of and interested in gardening, an interest which he indulged in the society of a neighbor, Sir Nicholas Bacon of Gillingham, to whom the "Garden of Cyrus" was dedicated. The whole title of the "Garden of Cyrus" is extremely quaint and is in itself a measure, a revelation, of the character of Browne's mind as influenced by the age in which he lived: "The Garden of Cyrus, or the Quincuncial Lozenge or Net-Work of the Plantations of the Ancients, artificially, naturally and mystically considered."

MEDICAL INSPECTION IN THE PUBLIC SCHOOLS.

The physician practising in a large city can see the advantages of medical inspection in the public schools. Inspection to prevent the spread of contagious disease undoubtedly comes properly within the control of the Board of Health. With regard to the exclusion from school of children suffering with scabies, pediculosis and ringworm, there should be no question, but in precisely these cases mere exclusion does not suffice. Where these diseases are at all prevalent the parents usually lack the facilities for treatment, or do not appreciate the importance of it. The inspector may make a diagnosis and advise exclusion, with a note to the parent referring the case to the family physician, or a dispensary. There is no one, however, whose business it is to see that the treatment is actually carried out. A school nurse could do this very effectively, with great benefit to the child and the school. The school nurse is no longer an experiment, and her success in New York City could be duplicated in Boston. The best means of providing nurses is a matter that deserves the earnest consideration of every physician. With a nurse to aid, an inspector could look for cases of pulmonary tuberculosis and be sure that when found they would be looked after, so as not to be a source of danger to other pupils.

Before discussing the extension of medical inspection to each individual child to prevent its being a source of danger, not only to others, but also to itself, we must recognize a question as to the limits of the authority of the Board of Health, and possible conflict with the authority of the School Board. This involves the fundamental

question of all preventive medical work. Disease is prevented as the result of doing certain things ordered by an executive authority, enlightened as to hygienic measures by medical advice, or by personal study. The executive authority may be the conscience of an individual, the master of a school, or a representative of the Board of Health. Better co-operation between the Board of Health and the School Board can be obtained by having the most intelligent and efficient members on each. Every physician should do his utmost and urge others also to secure the nomination and election of the wisest candidates.

Every physician may properly advise parents to visit the school and become well acquainted with their child's teacher. The physician can also explain the advantage of medical inspection for the child and for the children of neighbors. Physicians should urge the Board of Health to improve and extend its present system of inspection, and to make some arrangement for providing school nurses.

Another way of avoiding conflict of authority is to regard each child as a class of one and to advise and carry out, as far as possible, measures to benefit the health of that particular child. If it is suffering from eye strain, proper glasses may save it from having a lateral curvature of the spine and impaired digestion. If the child breathes through its mouth, it may have adenoids or merely a habit which can be corrected by closing the lips at night with court plaster. In either case, proper correction may prevent permanent deafness. Any specialist can make suggestions that would be helpful to the inspector and the teacher.

In smaller towns and villages professional jealousy may become a disturbing factor. The question of the respective rights of the School Board and the Board of Health is also likely to arise. In any school district where there is conflict of authority the parents may take the matter into their own hands by organizing a health insurance association and paying an inspector and a nurse to act in their behalf. Each parent who pays a sufficient sum will be all the more ready to co-operate in carrying out the advice of the inspector. Occasional lectures to groups of parents may add to their knowledge of right living.

MEDICAL NOTES.

DENVER AGNES MEMORIAL SANATORIUM RESIGNATIONS. — Not approving of the present policy of the institution, the entire medical board, consisting of Drs. Arnold Stedman, W. H. Bergtold, Carroll E. Edson, J. A. Wilder and L. B. Lockard, has resigned from the Agnes Memorial (Phipps) Sanatorium, Denver, Colo.

ALCOHOL IN PATENT MEDICINES. — It is reported that active preparations are under way at the Internal Revenue Bureau at Washington to put into effect the order which will require dealers in patent medicine to conform to legal requirements as liquor dealers. It is hoped thereby to overcome the well recognized evil of the presence of often considerable quantities of alcohol in bottles of so-called medicine. It is said further that an attempt will be made to introduce a bill bringing the taxes on proprietary medicines on the basis of the amount of alcohol they contain. The matter is a difficult one of solution, but such action will, no doubt, do something toward the abatement of the evil.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, Nov. 1, 1905, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 37, scarlatina 23, typhoid fever 17, measles 79, tuberculosis 34, smallpox 0.

The death-rate of the reported deaths for the week ending Nov. 1, 1905, was 15.3.

BOSTON MORTALITY STATISTICS. — The total number of deaths reported to the Board of Health for the week ending Saturday, Oct. 28, 1905, was 182, against 197 the corresponding week of last year, showing a decrease of 15 deaths, and making the death-rate for the week 15.11. Of this number 94 were males and 88 were females; 178 were white and 4 colored; 115 were born in the United States, 66 in foreign countries, and 1 unknown; 32 were of American parentage, 126 of foreign parentage, and 24 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 49 cases and 1 death; scarlatina, 13 cases and no deaths; typhoid fever, 18 cases and 4 deaths; measles, 48 cases and 1 death; tuberculosis, 39 cases and 18 deaths; smallpox, no cases and no deaths. The deaths from pneumonia were 14, whooping cough 0, heart disease 21, bronchitis 4, and marasmus 11. There were 12 deaths from violent causes. The number of children who died under one year was 45; the number under five years, 64. The number of persons who died over sixty years of age was 43. The deaths in public institutions were 55.

A Correction. — Through an error it was stated in our issue of Oct. 26 that Dr. Atwood R. Wood had been appointed superintendent of the Michigan Asylum for the Insane at Kalamazoo. The name should have been Dr. Alfred I. Noble who has for some years been assistant superintendent of the Worcester Insane Hospital at Worcester, Mass.

Care of the Feeble-Minded. — Several members of the London Commission on the Care and Control of the Feeble-Minded will this week investigate Massachusetts institutions. The Commission has already inspected various New York institutions, and later they will visit other states, finally reporting to the King their recommendations for the improvement of the system in vogue in England. It is said that a study of criminal statistics in Massachusetts is also a part of the program of work.

NEW YORK.

Bequests. — Among the charitable bequests made in the will of the late William N. Murphy, father of ex-Governor Franklin Murphy of New Jersey, are $1,000 each to St. Barnabas Hospital, Newark, and the Newark Eye and Ear Infirmary.

A New Nurses' Home. — The new Nurses' Home, a model institution of its kind, connected with the Kingston Avenue Hospital (Brooklyn) of the Health Department was opened on Oct. 18, and Dr. Darlington, the president of the department, sent out a large number of invitations to the physicians of the city to visit and inspect the building.

Appropriation for Tuberculosis Sanitarium. — On Oct. 27 the Board of Estimate and Apportionment appropriated $800,000 for the new city tuberculosis sanitarium on Staten Island, bringing the total appropriation to date up to $1,000,000. The Board also guaranteed the additional $1,000,000 required for the completion of the institution in accordance with the plans which have been submitted.

Opening of a New Hospital. — A new hospital, located at Williams Bridge, in the Bronx, was opened with public ceremonies on Oct. 29. It has recently been granted a charter by the State Board of Charities, and is to be known as the Philanthropic Hospital. At present it occupies only temporary quarters, but the permanent buildings in contemplation will be in the immediate vicinity. An institution of the kind is urgently demanded by the growing requirements of the district, which is rapidly filling up with a new population, there being no general hospital nearer than Mount Vernon on the north and Fordham on the south.

Dedication of Washington Heights Hospital. — The new Washington Heights Hospital was publicly dedicated on Oct. 15. It occupies the old Perkins mansion at One Hundred and Seventy-ninth Street and Broadway (historically known as Kingsbride Road), which for many years has been a landmark in the vicinity of Fort Washington. The building has been altered and equipped with modern hospital appointments. At present there are thirty-two beds, and about a dozen more will shortly be added. The medical and surgical staff consists of nine members. The new hospital will serve to relieve the J. Hood Wright Memorial Hospital at One Hundred and Thirty-first Street, which has hitherto had to attend to the hospital needs of all the west-side territory up to the Spuyten Duyvil.

Delirium Tremens as a Result of Injury. — What seems to have been a rather extraordinary case has just been decided in the New York Supreme Court. On Oct. 24 Mrs. Elizabeth O'Leary, whose husband, Arthur O'Leary, died in Bellevue Hospital of delirium tremens, recovered a verdict of $5,000 from the New York Central and Hudson River Railroad Company on the alleged ground that O'Leary's death was indirectly due to negligence on the part of the railway company. The plaintiff asserted that in October, 1904, her husband, who was a truckman, was injured at the Thirtieth Street freight depot of the company, both his legs being broken by a packing box thrown upon him by one of the company's employees. O'Leary was taken to Bellevue Hospital, where he developed delirium tremens and died twelve days later; and the contention in the suit was that the delirium tremens would not have been produced had it not been for the accident. The medical evidence on which the verdict of the jury must naturally have been based has not been made public.

Centenary of Medical Society of County of New York. — The annual meeting of the Medical Society of the County of New York, held Oct. 23, marked the completion of a hundred years in the existence of the society. The real celebration of the century anniversary, however, will be held in April next, and it is in contemplation to make the occasion a noteworthy one. C. S. Andrews, counsel to the society, in his annual report on the cases of fraudulent practi-

tioners who had been prosecuted, referred to the assistance given to quacks and charlatans by the newspapers which printed their advertisements, and a resolution denouncing such newspapers was passed by the society. The following officers were elected for the ensuing year: President, Dr. Floyd M. Crandall; first vice-president, Dr. Walter Lester Carr; second vice-president, Dr. William N. Park; secretary, Dr. John Van Doren Young; assistant secretary, Dr. J. Milton Mabbott; treasurer, Dr. Charles H. Richardson; censors, Drs. H. S. Stearns, C. G. Coakley, J. E. Newcomb, H. S. Houghton and Egbert Le Fevre.

CONSOLIDATION OF THE TWO STATE MEDICAL SOCIETIES. — At the twenty-second annual meeting of the New York State Medical Association, which was held at the Academy of Medicine, Oct. 16–19, it was finally determined, with but two votes in the negative, to amalgamate with the Medical Society of the State of New York. The united societies will bear the name of the older body, the State Society, and when the details of organization have been completed, the Association will pass out of existence. In the meanwhile officers of the Association were elected as follows: President, Dr. Allan A. Jones of Buffalo; vice-president, Dr. H. Ernst Schmid of White Plains; secretary, Dr. Charles I. Redfield of Middletown; treasurer, Dr. James G. Le Boutillier of New York. The annual banquet of the Association was held at the Hotel Astor on the evening of Oct. 18, when the president, Dr. J. Riddle Goffe, acted as toastmaster. The first speaker was Dr. William J. Mayo of Minnesota, president of the American Medical Association, who in his remarks said that the nostrum evil was the greatest one confronting the medical profession at the present time. All the members of the National Association, he thought, should work as a unit to discountenance the publication of patent medicine advertisements, now so universal, and to bring into disrepute the papers printing them. Samuel Hopkins Adams, who, as a member of the editorial staff of a periodical, is engaged in conducting a campaign against proprietary medicines, either useless or positively harmful, said his investigations had revealed very discouraging conditions. A large part of the American press was practically held in slavery by proprietary medicine interests, and this was to be explained by the fact that for the $250,000,000 of capital invested, proprietary medicine men spent a larger proportion for advertising than any other class in the world. Among the other speakers were Dr. Suzuki, surgeon-general of the Japanese navy, and President Darlington of the Health Department.

ANNUAL MEETING OF MANAGERS OF ST. LUKE'S HOSPITAL. — The annual meeting of the board of managers of St. Luke's Hospital was held on St. Luke's day, Oct. 18, and the forty-seventh annual report of the institution showed that during the past year the gifts and legacies amounted to $96,321. It dealt at some length with the criticisms which have been aimed at hospitals in New York, to the effect that these institutions were averse to receiving free patients, and that their energies were devoted to the building up of private wards and the development of special medical and surgical departments. The report states that never in the history of the hospital has St. Luke's refused admission to a patient because of his inability to pay, although at times, unfortunately, the lack of a vacant bed necessitates such refusal. None of the wards are designated as "free wards" or "pay wards." Patients who pay nothing and those who pay something are placed in the same wards, and the same treatment, the best that the hospital can give, is accorded to each alike. The maximum amount received from any ward patient is $10.50 a week, an average of 25% less than the cost of the patient's support; the minimum is any fraction of this amount which the patient may be able to pay. The amounts received from full-pay patients occupying private rooms varies, according to the accommodations provided, from a sum just sufficient to pay for their maintenance and care to amounts beyond this cost, and any profit accruing to the hospital from such patients is applied to the increase of the fund used for the care of free patients. For the year just ended, 78.9% of the work, as measured by hospital days, has been free. It was hoped that the Margaret J. Plant pavilion, which will materially increase the capabilities of the hospital, would be ready for occupancy this autumn, but by reason of strikes and other obstacles, the opening of this addition will have to be postponed until the early part of the next calendar year.

Obituary.

REBECCA BARNARD, M.D.

AT the last meeting of the New England Hospital Medical Society, Oct. 19, 1905, the following resolutions were read:

In the death of Dr. Rebecca Barnard of Worces-

ter, Mass., the New England Hospital Medical Society loses another of its earlier members.

Dr. Barnard was a woman of great executive ability and a strong character, which did not fail to impress itself upon her patients. She was always ready to listen to the call of distress and do her utmost to relieve it. She was much interested in the public schools and served for a time on the school committee of Worcester. During the last two years of her life, while incapacitated for further work she was a model of patient submission to the inevitable. Be it, therefore,

Resolved, That the New England Hospital Medical Society deplores her loss, and extends its sympathy to her family.

Resolved, That this resolution shall be placed on the minutes of this society and a copy of the same be sent to her family.

Resolved, That this expression of appreciation be published in the Boston Medical and Surgical Journal.

Miscellany.

TYPHOID PERFORATION.

From a study of the subject, R. H. Harte, Philadelphia,[1] concludes that perforation is a much more common accident in typhoid fever than is generally supposed, it being the cause of death in one out of every three or four fatal cases. It occurs most frequently between the fourteenth and twenty-first day of the disease, and does not appear to be more common in the severest than in the mildest types of the disorder. The ileum is its most frequent site, the majority of perforations occurring within from 12 to 18 inches of the ileocecal valve. The next most common localities are the appendix and the cecum. In a large percentage of cases, pain is present, though it may be only transitory. In about half the cases the onset is sudden, severe and with increasing intensity, localizing itself in the right iliac fossa. Tenderness and rigidity are present to a greater or less extent in all cases. The latter, Harte considers a most valuable sign, never absent except in patients with very large and pendulous abdomens. If perforation is suspected, the temperature should be taken every hour to verify any marked variation in this symptom. Distention is a late symptom usually noticed some hours after the perforation has occurred. Obliteration of liver dullness is not regarded as a reliable sign. The study of the leucocytes is of little use, though occasionally their increase may make the diagnosis more positive. The differential count is of no practical value. Before making a positive diagnosis, pain caused by pleurisy, pneumonia, cholecystitis, acute gastro-intestinal indigestion, iliac thrombosis, appendicitis, peritonitis, renal calculus, distended urinary bladder, or even a hemorrhagic exudate into the abdominal muscles must be carefully considered, as any of these may simulate perforation. Nature may sometimes close perforations, but the only rational course when they occur is surgical intervention. No case is too desperate for operation, as the worst are sometimes saved. In case of doubt, when symptoms point to perforation, the safest course is to operate. Even when no perforation is found, patients, as a rule, seem benefited by operation. With the diagnosis once made, Harte knows of no other condition, except possibly hemorrhage, in which speed in operating is so important as in this. Everything should be prepared beforehand so that there may be no delay when once the knife is taken in hand.

[1] Journal A. M. A., Oct. 28, 1905.

Correspondence.

MASSACHUSETTS STATE CONFERENCE OF CHARITIES.

Boston, Mass., Oct. 30, 1905.

Mr. Editor: "Medical Inspection in the Public Schools" is the subject for discussion at the opening meeting of the Third Massachusetts State Conference of Charities, to be held at Tremont Temple on Wednesday evening, Nov. 8, at 8 P.M. Dr. Durgin will speak on "The Work of the Boston Board of Health in School Inspection." Dr. James B. Fitzgerald will speak of "The Work of the Boston School Committee." The Secretary of the State Board of Education, Mr. George H. Martin, will tell what is being done throughout Massachusetts. Miss Lina Rogers, superintendent of nurses under the New York City Board of Health, will give an account of "The School Nurses in New York." As the provision for a school nurse is the next forward step to be taken for the welfare of public school pupils, it is hoped that all physicians and others interested will endeavor to come and hear what has been done in New York. Miss Rogers is an interesting speaker.

The conference will probably appoint a committee to serve as a clearing house for further discussion and information in regard to the whole subject.

Very truly yours,

Calvin G. Page, M.D.

RECIPROCAL INDORSEMENTS OF STATE MEDICAL LICENSES.

Camden, N. J., Oct. 31, 1905.

Mr. Editor: At a conference held between the Board of Regents of New York and the State Board of Medical Examiners of New Jersey, at Trenton, N. J., Oct. 16 last, it was decided to indorse each other's examined licentiates without further examination, beginning Jan. 1, 1906.

The medical license of New Jersey is indorsed at this time in lieu of further examination by Maine, Vermont, Delaware, Virginia, South Carolina, Texas, Ohio, Illinois, Michigan, Minnesota, Wisconsin, Kansas and Colorado.

New Jersey will indorse the medical license issued by any state, after examination, whose educational, examining and licensing requirements are substantially equal to, or higher than, those of New Jersey, irrespective of reciprocity, provided the applicant complies with the conditions of indorsement.

The standard of requirements of New Jersey consists of a high school diploma issued after four years of study and a medical diploma issued after four courses of lectures of at least seven months each, in four different calendar years, in a medical college of approved standing.

Very truly yours,

E. L. B. Godfrey, M.D., *Secretary.*

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, OCT. 21, 1905.

CITIES.	Population.*	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diphtheria and croup.	Typhoid Fever.	Cerebro-spinal Meningitis.
New York . .	3,908,644	1,287	401	26.41	13.60	2.17	1.32	.62
Chicago . . .	1,999,750	466	134	30.69	9.44	1.71	2.57	—
Philadelphia .	1,467,968	398	117	24.61	8.05	2.25	1.75	.25
St. Louis . .	633,606	—	—	—	—	—	—	—
Baltimore . .	542,229	197	63	26.90	10.15	1.52	2.53	—
Cleveland . .	444,251	—	—	—	—	—	—	—
Buffalo . . .	409,645	—	—	—	—	—	—	—
Pittsburg . .	362,403	123	46	25.20	15.44	2.44	5.79	—
Cincinnati . .	338,277	—	—	—	—	—	—	—
Milwaukee . .	325,990	—	—	—	—	—	—	—
Washington .	300,776	—	—	—	—	—	—	—
Providence .	196,744	62	12	16.13	9.68	3.23	3.23	—
Boston . . .	593,598	179	45	24.58	4.47	—	2.79	.56
Worcester . .	127,963	43	12	16.28	4.65	—	6.98	4.65
Fall River . .	105,697	37	20	45.95	8.11	5.41	—	—
Cambridge . .	97,426	23	10	13.04	17.39	—	—	—
Lowell . . .	94,845	29	10	17.24	17.24	3.45	—	—
Lynn	77,025	19	8	26.32	—	5.26	10.53	—
New Bedford .	74,321	10	4	20.00	—	20.00	—	—
Springfield .	73,484	19	3	21.05	—	—	—	—
Lawrence . .	69,939	25	15	20.00	8.00	—	—	—
Somerville . .	68,188	13	1	38.46	15.38	7.69	—	—
Holyoke . . .	49,124	15	4	40.00	—	—	—	6.67
Brockton . .	47,782	9	0	22.22	—	—	—	—
Malden . . .	37,990	8	4	—	12.50	—	—	—
Haverhill . .	37,818	16	3	25.00	25.00	12.50	—	—
Salem	37,586	10	2	10.00	—	—	—	—
Chelsea . . .	37,277	15	6	6.67	13.33	—	—	6.67
Newton . . .	36,694	16	2	6.25	6.25	—	6.25	—
Fitchburg . .	33,017	2	1	—	—	—	—	—
Taunton . . .	30,952	11	2	27.27	18.18	—	—	—
Everett . . .	29,108	10	4	10.00	—	—	—	—
Quincy . . .	28,067	4	—	—	25.00	—	—	—
Waltham . .	26,239	3	1	33.33	—	—	33.33	—
Gloucester . .	26,006	—	—	—	—	—	—	—
Pittsfield . .	25,000	7	1	28.57	—	—	—	—
Brookline . .	23,424	4	—	—	—	—	—	—
North Adams .	22,125	5	2	—	—	—	—	—
Chicopee . .	20,187	5	2	20.00	—	—	—	—
Northampton .	19,942	6	1	16.67	—	16.67	—	—
Medford . . .	19,038	5	1	—	40.00	—	—	—
Beverly . . .	15,222	10	—	10.00	10.00	—	—	—
Newburyport .	14,673	6	0	33.33	—	—	—	—
Hyde Park . .	14,492	2	0	—	—	—	—	—
Woburn . . .	14,401	4	2	—	—	—	—	—
Melrose . . .	14,294	6	2	16.67	—	—	—	—
Leominster . .	14,290	—	—	—	—	—	—	—
Marlboro . .	14,072	1	0	—	—	—	—	—
Westfield . .	13,609	0	—	—	—	—	—	—
Clinton . . .	13,103	1	1	—	—	—	—	—
Peabody . . .	13,097	—	—	—	—	—	—	—
Attleboro . .	12,702	—	—	—	—	—	—	—
Revere . . .	12,647	5	2	40.00	20.00	—	—	—
Adams	12,482	—	—	—	—	—	—	—
Milford . . .	12,105	—	—	—	—	—	—	—
Gardner . . .	11,991	—	—	—	—	—	—	—
Weymouth . .	11,585	5	0	20.00	—	—	—	—
Framingham .	11,549	—	—	—	—	—	—	—
Watertown . .	11,202	2	2	50.00	—	50.00	—	—
Plymouth . .	11,118	—	—	—	—	—	—	—
Southbridge .	10,947	4	2	—	—	—	—	—
Wakefield . .	—	3	1	—	33.33	—	—	—

* As last reported.

Deaths reported, 3,130; under five years of age, 944; principal infectious diseases (smallpox, measles, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption), 804; acute lung diseases 338, consumption 340, scarlet fever 14, whooping cough 15, cerebrospinal meningitis 15, smallpox 0, erysipelas 4, puerperal fever 10, measles 6, typhoid fever 62, diarrheal di[illegible]4, diphtheria and croup 63.

[illegible] whooping cough, New York 7, Baltimore 3, Pittsburg [illegible], Boston 2, Lowell 1, Cambridge 1. From scarlet fever, New York 6, Chicago 1, Philadelphia 1, Pittsburg 5, Worcester 1. From cerebrospinal meningitis, New York 8, Philadelphia 1, Boston 1, Worcester 2, Holyoke 1, Chelsea 1, Revere 1. From erysipelas, New York 2, Chicago 1, Pittsfield 1. From measles, New York 2, Philadelphia, Baltimore Pittsburg and Boston, 1 each. From typhoid fever, New York 17, Chicago 12, Philadelphia 7, Baltimore 5, Pittsburg 7, Providence 2, Boston 5, Worcester 3, Lynn 2, Newton 1, Waltham 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,609,377, for the week ending Oct. 14, 1905, the death-rate was 13.7. Deaths reported 4,093; acute diseases of the respiratory organs (London) 101, whooping cough 35, diphtheria 46, measles 34, smallpox 0, scarlet fever 43.

The death-rate ranged from 5.0 in Wallasey to 24.9 in Middlesbrough; London 14.0, West Ham 14.7, Brighton 10.7, Southampton 12.7, Plymouth 18.9, Bristol 12.5, Birmingham 13.0, Leicester 14.9, Nottingham 14.9, Birkenhead 11.2, Liverpool 16.4, Wigan 22.3, Bolton 12.0, Manchester 14.2, Salford 16.0, Halifax 12.5, Bradford 10.7, Leeds 11.5, Hull, 13.3, Sheffield 16.2, Newcastle-on-Tyne 13.6, Cardiff 8.1, Rhondda 9.6, Merthyr Tydfil 14.1, Kings Norton 13.5, Tynemouth 18.5.

METEOROLOGICAL RECORD.

For the week ending Oct. 21, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

DATE	Barometer.	Thermometer.			Relative humidity.		Direction of wind.		Velocity of wind.		We'th'r *		Rainfall in Inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A.M.	8.00 P.M.	Daily mean.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	
S. 15	30.23	64	77	50	66	62	64	S	W	S	W	3	14	F.	F.	0
M. 16	30.10	67	78	56	86	47	66	S	W	W		12	17	F.	C.	0
T. . 17	30.32	58	66	50	63	60	62	W	S	W		7	5	C.	C.	0
W. 18	30.20	58	70	47	76	79	78	S	W	S	W	5	14	F.	O.	0
T. . 19	29.96	70	75	64	81	69	75	W	S	W	S	10	6	O.	O.	.09
F. . 20	29.70	56	66	52	94	94	94	N	S	W		9	16	R.	O.	.55
S. . 21	29.91	45	52	39	61	52	56	W		W		24	12	C.	C.	0
☞	30.06		68	51			71									.64

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Means for the week.

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING OCTOBER 28, 1905.

J. STEPP, passed assistant surgeon. Ordered to the "Southery," and to additional duty at the Navy Yard, Portsmouth, N. H.

V. DABNEY, acting assistant surgeon. Detached from the "Southery," ordered home and resignation as acting assistant surgeon accepted to take effect Nov. 6, 1905.

H. L. LAW, surgeon. Retired, ordered to the Naval Recruiting rendezvous, Boston, Mass., Nov. 3, 1905.

BOOKS AND PAMPHLETS RECEIVED.

Cleft Palate and Hare Lip. By W. Arbuthnot Lane, M.S., F.R.C.S. Illustrated. London: The Medical Publishing Co., Ltd. 1905.

Some "Liver" Cases. By J. H. Carstens, M.D. Reprint.

Quackery. By Dudley F. Sicher. Reprint.

The Physician and The Sunday Question. By Dr. George Richter. Reprint.

Static, High Frequency, Radio, Photo and Radium Therapy. By William Harvey King, M.D., LL.D. Illustrated. New York: Boericke & Runyon. 1905.

The Medical Epitome Series. Practice of Medicine. A Manuel for Students and Practitioners. By Hughes Dayton, M.D. Series edited by Victor Cox Pedersen, A.M., M.D. New York and Philadelphia: Lea Brothers & Co. 1905.

The Microtomist's Vade-Mecum. A Hand-book of the Methods of Microscopic Anatomy. By Arthur Bolles Lee. Sixth edition. Philadelphia: P. Blakiston's Son & Co. 1905.

Surgical Aspects of Digestive Disorders. By James G. Mumford, M.D., in association with Arthur K. Stone, M.D. Illustrated. New York: The Macmillan Company; London: Macmillan & Co., Ltd. 1905.

Methods of Organic Analysis. By Henry C. Sherman, Ph.D. New York: The Macmillan Company London: Macmillan & Co., Ltd. 1905.

The Barber Shop in Society. By Isadore Dyer, Ph.B., M.D. Reprint.

The Cure of Leprosy. By Isadore Dyer, Ph.B., M.D. Reprint.

Die Grenzen und Wechselbeziehungen Zwischen der mechanischen Orthopaedie und orthopaedischen Chirurgie. Von Dr. Oskar von Hoverka. Anvers. 1905.

American Society of Sanitary and Moral Prophylaxis. Organized Feb. 12, 1905.

Address.

THE PRESIDENT'S ADDRESS BEFORE THE AMERICAN HOSPITAL SUPERINTENDENTS' ASSOCIATION.*

BY GEORGE H. M. ROWE, M.D., BOSTON.

THE increase in the membership of this association has been so rapid during the last two or three years that I doubt if the majority of those present know our early beginnings. Six years ago, at Cleveland, Ohio, this body was organized, with only eight members, and to them is due the formation of this association.

The second annual conference was held at Pittsburg, 1900, but, judging from the scanty records, the principal business was feasting and excursions.

The third gathering was held in New York, 1901, with forty-four in attendance; and the fourth in Philadelphia, 1902, having as president, Dr. J. T. Duryea, Medical Superintendent of the Brooklyn Borough Hospital. This conference got more strictly down to the business, worthy of those intrusted with interests so important to the well-being of the country.

The fifth annual conference took place at Cincinnati, October, 1903. Fifty-nine members were present and increased interest was shown, on subjects germane and vital. Mr. John Fehrenbatch, Superintendent of the Cincinnati Hospital, was president.

As many of you know, the sixth and last conference was held at Atlantic City, September, 1904. Sixty-nine members were recorded and a few others failed to register and, therefore, cannot be counted. Mr. Daniel D. Test, Superintendent of the Pennsylvania Hospital, was president. This conference was very successful. Many of the papers were valuable and the discussions proved stimulating. Last year closed with 130 members on the list. It is a pleasure to say that the Membership Committee has been quite successful in its vigorous crusade and our number has received 88 additions during the year, making a total of 218 active members, and we have, also, 9 honorary members.

But let it not be forgotten that there are 1,500 beneficiary hospitals in the United States, not counting insane hospitals, sanatoriums, or private hospitals. There are, therefore, something like 1,300 more superintendents somewhere, that should be gathered into this fold. When every member loyally becomes active propaganda, this association will be a body of intelligent workers, shoulder to shoulder, from the rock-bound shores of Maine to the orange groves of California. Make it known, that the spirit of the association is democratic, inclusive, co-operative, and not organized upon narrow or partisan lines.

Despite the inevitable disappointments from unforeseen but quite reasonable causes, the executive committee hopes that the program will be found practical and helpful, rich with experience rather than theory, and stirring us to renewed effort and better achievement. We bid you welcome, not only to this conference, but we cordially open our hospitals for your inspection; we beg you to enjoy our time-honored city, with its historic associations and works of art, but best of all, we welcome you to the good fellowship of each other.

Of those who were members at the last conference, I know of only one death among our number.

Dr. George F. Keene, Superintendent of the Rhode Island State Hospital for Insane, died at his home in Howard, R. I., March 13, last, from acute croupous pneumonia, after an illness of six days.

Dr. Keene was an exceptional man, of many parts. As an administrator, as an alienist, as a diagnostician, as a writer and as a physician he stood foremost in his community. As a man he was strong in character, sincere in his beliefs, frank and forcible in the expression of his opinions, true in his friendships, honest and faithful in the performance of his duties.

There are many vital and perplexing questions that confront us hospital workers, and from the many-sided nature of a superintendent's work, they sometimes seem beyond the possibility of solution; but there is also sympathy and encouragement for every worker, in knowing that he is not an isolated unit but a part of a great beneficent movement, world-wide, and in which the United States is taking a leading part. No country is making a greater advance in hospital extension than our own. Some statistics which have come to my notice prove this, and I hope you may find them likewise interesting.

By special permission of the United States Bureau of Commerce and Labor, I am allowed to present them to you, in advance of their publication by the department.

Notwithstanding the United States government has thousands of clerks compiling various statistics from different points of view, it is remarkable that there never has been any reliable hospital statistics published by any governmental department except, possibly, schools for nursing, in the report of the United States Bureau of Education, and in this nothing later than 1902. Among the recent developments in the Department of Commerce and Labor, is a census bureau, with a division of Vital Statistics, which is again divided into the inquiry on pauperism, insanity, feeble-mindedness and benevolence. Under the sub-division of benevolence, a complete census of all the benevolent institutions in the United States was made. Under this phrase ("benevolent institutions") were included all institutions (except hospitals for the insane) which were not run for private profit and depending more or less on endowments, subsidies from public funds, donations, taxes and the like. Inquiry was made of every county clerk in every State of the Union, so that the ground has been well canvassed.

Hospitals were divided into three groups, — public, private and ecclesiastical. Public hospitals include those supported wholly by public

* Held at Boston, Tuesday, Sept. 26.

cost, that is, paid for in some way by taxation. Private hospitals are the charitable enterprises that are controlled by private organized corporations and not indirectly under the supervision of the civil authorities. The hospitals controlled and maintained by religious denominations or by church associations are designated as ecclesiastical. The general summary gives 1,493 benevolent institutions, or, in round numbers, 1,500. Total number of patients admitted during 1904, 1,064,512; number of nurses, 21,844; total cost of maintenance of all these institutions, $28,200,869. Of the total number of institutions, 220 were public, 831 private and 442 ecclesiastical. Please observe that there are only half as many public hospitals as there are ecclesiastical hospitals, and only half as many ecclesiastical hospitals as there are private.

It is worthy of notice that the number of small private hospitals which are purely business ventures, is rapidly on the increase in the United States. One or two surgeons having the reputation of being what the laity call, "great surgeons," organize small hospitals, of twenty beds more or less, to which they bring their patients, instead of sending them to the public hospital where, possibly, they are visiting surgeons. The policy of the trustees of many public hospitals in discouraging many private rooms for paying patients, is a factor in this result. Again, certain hospitals do not, under any circumstances, permit a visiting physician or surgeon to take a professional fee from a patient, and this has fostered the establishment of money-making hospitals.

Personally, I am strongly in favor of a reciprocal arrangement between the hospital staff and the management, whereby the hospital, the patient and the doctor can be mutually benefited, by means of a "square deal" for all concerned.

Private hospitals, as purely money-making ventures, find their climax in some of the cities on the Pacific coast, where they are run with the same competition as any business.

The distribution of the public hospitals in the different states stands in the following order: New York, 194; Pennsylvania, 145; Illinois, 105; Massachusetts, 93; Michigan, 59; and so on. Only one state (Nevada) has no hospital, either public, private or ecclesiastical. New York has the largest number of public hospitals, Pennsylvania is second, Illinois third, Massachusetts fourth and California fifth. In the private or corporation hospitals, New York has 123 private as against 29 public hospitals; Pennsylvania has 112, as against 15; Massachusetts, 68 against 13; and Illinois, 42 against 11. Of the ecclesiastical hospitals, Illinois easily leads with 53, New York, 42, Ohio, 27, Minnesota 25, and Wisconsin 22. Ecclesiastical hospitals are found in every state but three, and one of these, somewhat curiously, is Delaware.

During the year 1904, 1,064,512 patients were admitted for treatment. New York led with 246,500, Pennsylvania second, 124,000; Illinois third, 85,600, and Massachusetts fourth, with 48,500, and so on.

The matter of paying patients in 1903 shows that $12,181,484 were collected, which is about 43% of the cost of maintenance of all the tabulated hospitals. In this, New York had the energy to collect $1,951,000; Illinois second, $1,365,000; Massachusetts third, $973,300; and California fourth, $811,809. The total cost of maintenance was $28,200,869. The ratio of the income tallied with the number of private hospitals already given.

It is also interesting to know the number of patients per 100,000 of the population. The District of Columbia comes first, showing that out of every 100,000, 5,220 received beneficiary treatment; next, New York, 3,166; California, 3,039; Massachusetts, 2,420; and after that, the States of Washington, Colorado, Maryland, New Jersey and Illinois.

Many deductions might be made from these figures: for instance, New York State not only led in the total number of beneficiary institutions, but comes second in the ratio of patients to population. The writer has not the local knowledge necessary for determining why the number of patients per 100,000 should be in the following order: District of Columbia, New York State, California, Massachusetts, State of Washington, Colorado, Maryland and New Jersey. It also appears, incidentally, that the number of resident medical staff in this total of 1,493 hospitals, is 2,863, or an average of about 2 per hospital, and the number of the visiting staff, 15,914, an average of 10.

Out of these 1,493 institutions, 867 maintain training schools for nurses, showing that 58% of the beneficiary institutions now have training schools. There is some discrepancy between the report of the Bureau of Commerce and that of the Commissioner of Education. The latter reports for the year 1903, 13,252 nurses in training while the Bureau of Commerce records 21,844. Perhaps this difference of over 8,000 may be accounted for by the fact that the Bureau of Vital Statistics made its report two years later, and has done it more thoroughly. The ratio of training schools among the states is much the same as the number of hospitals, — New York 117, Pennsylvania 106, Massachusetts 67, Illinois 61, Ohio 43. Among the smaller number it is interesting to note that Montana, Arkansas and Utah each have 3 training schools; Delaware, Idaho, North Dakota and Wyoming each have 2; while Arizona, Indian Territory, New Mexico, have 1 each; Oklahoma being the only one of the United States that has no training school for nurses.

The foregoing statistics are full of significance to the studious hospital superintendent, because it is the first time that reliable data have been accessible. This study might be still further illuminating by classifying with tables of percentages. For instance, New York stands first in the total number of beneficiary institutions and Massachusetts fourth, and this Common-

wealth also furnishes the largest percentage of institutions to its total population. Does this mean that Massachusetts is growing slipshod and tends to medical pauperism, or that it is developing a humanitarian interest which promptly expresses itself in the concrete terms of benevolent institutions? Bear in mind that hospitals for the insane, health sanatoriums and hospitals maintained strictly as money-making concerns are not included in this inquiry.

The growth of benevolent institutions from year to year is extremely interesting. It shows a tendency and "tendencies are the index-fingers on the guide-posts of civilization." In the fourteen years from 1890 to 1903, the number of institutions has shown a remarkable development of 45 to 60 new hospitals every year; in other words, the number nearly doubled. In 1900 the number jumped to 75, and in 1903 there were 90 new ones, an advance really phenomenal.

Civic pride and local philanthropy have caused a remarkable growth in the United States, of hospitals with 20 to 30 beds. Massachusetts, for instance, which, at the close of the Civil War, had only 11 general and cottage hospitals, to-day has 93 hospitals, of which 13 are public, 68 private and 12 ecclesiastical. In the six small New England states there are now 163 hospitals, which is a six-fold increase in thirty-two years.

What does this somewhat lengthy array of figures mean? Does it not indicate an increased public confidence, so that not only the poor, but the well-to-do, class seek hospital treatment? Does it not mean that hospitals, by able management and greater efficiency, have justified themselves, so that the rich are glad to bequeath large sums for their erection and support? At the close of the Civil War the country woke up to its lamentable deficiency in hospitals. With returning prosperity came greater wealth for larger enterprises, which, with the advances in medicine and surgery and the need of supplying trained nurses, culminated in hospital extension. Certainly this remarkable increase in the United States is one manifestation of the great social and humanitarian movement, which, planted in the nineteenth century, brings to the twentieth century a splendid fruitage.

Hospitals are effective in decreasing the death-rate, and Florence Nightingale said, "The death-rate of a community is the measure of its civilization."

Among the scores of salient and pressing topics, may I bring forward one or two propositions for your consideration?

The annual deficit is a vital question that confronts many hospitals, both large and small, particularly the former. It is occasionally tided over for a single year by a lump sum from a millionaire's purse, but the same causes go on perpetually, and the deficit recurs as surely as the leaves fall in the autumn.

Let us first consider large hospitals in cities. Most of them are built upon restricted sites. To enlarge laterally is to shut out the sun, one of the best of all curative agents. The alternative is to go upwards and some of our hospitals mount to five, eight and even ten stories. The quality of the internal and external construction must keep pace with established standards and the results are, buildings expensive at the outset and costly to maintain.

I would strongly advocate that if large hospitals in cities must increase the bed capacity, it should be done by establishing branch hospitals somewhere outside the crowded city, but easy of access. This is no new idea. It is probably true that of the patients who have been in the hospital seven days, from 30% to 50% might be transferred to the out-of-town hospital, without detriment, leaving their beds for others requiring immediate or more careful treatment.

Such a branch hospital, on a judiciously selected site, with buildings simple in construction inside and out, would not require the expensive interiors, usually given to operating rooms, administration buildings and other accessories. It could be built for two thirds the amount of money displayed in many of our first-class hospital buildings in cities. The weekly *per capita* cost could be markedly reduced by economies hardly possible in city buildings dependent upon city prices for regular disbursements for maintenance. Such a hospital would supply more sunlight, purer air, and surroundings that conduce to recovery. This branch hospital should be more than a convalescent home, as that term is usually understood, and should be equipped for the continued treatment of acute disease and surgical needs. For instance, the Massachusetts General Hospital has a convalescent home at Waverley, for about thirty-five patients. At first it was only used for convalescents, but later, when applicants were refused at the hospital for want of beds, the experiment was tried of transferring so-called acute cases to the Convalescent Home, to make room at the hospital. Under this procedure, compound fractures, surgical diseases not requiring larger surgical operations, medical cases capable of transfer without injury, were treated there, making it really an annex, or branch hospital. In the last published annual report of the Massachusetts General Hospital, the cost per week in 1904 was $16.95. The average cost per week at the Convalescent Home was $7.88. Assuming that the patients averaged 35, the difference between supporting only 35 patients at the general hospital and the branch hospital would be about $16,500 per year.

This idea might be developed indefinitely, a hospital being thus composed of two constituents, one in town for emergencies and first care, the other in the country, for the better treatment of a part of the general cases. The obstacles to this scheme would be, primarily, the want of funds, the courage necessary to begin such a project, and probably the opposition of the medical board, as removing useful material for the clinical teaching of medical students.

I desire, however, to stand for this plan as a feasible, economical and rational way of enlarging hospitals in cities. It is one way whereby the

weekly *per capita* cost can be radically reduced, as already demonstrated, and it would certainly help to reduce the larger expenditure if not eliminate the notorious annual deficit.

A deficit in the smaller hospitals is even more appalling, since the possible revenues are so limited. Is there a more heroic, not to say pathetic spectacle, than the self-sacrificing and indefatigable struggle of a small band of men and women (especially the women) in their attempt to carry on a cottage hospital of ten or fifteen beds, in a rural community? One possible solution is the long-established custom in Great Britain of having a community hospital, that is, a union of several towns with one hospital at a central point, each town sharing the expense.

The personal element in hospital work is not small. The daily routine with its wearisome details tends to blight originality, alertness, motive and enthusiasm. Nothing is so deadly as getting into a rut. Who does not need inspiration and new ideas from his hospital neighbor? The flint gives no spark without steel. Let me ask the members present: Do you have a good, cordial acquaintance with every hospital superintendent in your vicinity? How often do you spend two or three hours in visiting your hospital neighbor, with the intent of learning how it is conducted? Why should there not be a national organization that would be an association of hospital managers, by which I mean, managing boards, the superintendents, the auxiliary visiting committees, and perhaps the medical staff also?

Co-operation is the key-note of the era. This is seen in business, railroads, commerce, professions, trades, and that tremendously growing body, — labor unions. Such a combination might not be possible, but the co-operation of hospital communities, with the right spirit and push, need not be difficult.

Take any one of our dozen largest cities. How many hospitals adopt similar methods, as the result of their combined experience? Each has its own arrangement of buildings, the architecture and plans of its wards, different systems of organization, different ways of selecting its ward patients, still greater confusion existing in the appalling out-patient abuse. No two have the same method of bookkeeping; each thinks its own quite as good if not better than its neighbor's. There is no uniformity in the relations and traditions of the medical board to the management, or in the long list of obvious problems that try our souls.

A hospital organization in any community only requires a few leading spirits of the right admixture and happily connected as to institutions. London has an organiaztion called the Hospital Association. The numerous problems discussed there should bring forth some fruit, but only limited accounts have reached us on this side of the water in regard to results.

The attempt is being made in New York to form a merger called the "New York Association for Improvement of the Condition of the Poor." To be sure, at its first meeting it considered "hospital needs and hospital finances." The association has received copious advice from the lay and the medical press, and our New York coterie of members may perhaps tell us what it has actually accomplished. The primary purpose in this movement was for the poor, the hospital question being a side issue.

In Massachusetts this co-operation has gained some strength in an association of hospital superintendents called the "Hospital Round Table," which meets three or four times each year. Beginning with only half a dozen, it now numbers thirty-six, with an average attendance of twenty-four, and includes the men superintendents of general, special and insane hospitals. The Round Table devotes itself entirely to the discussion of administration problems, and by the freest and most open exchange of experience has furnished valuable information, given fresh courage and promoted good-fellowship.

Following the custom of the men, the women superintendents of nurses have for several years had their "Linda Richards' Club," and, no doubt, have received a similar benefit.

These are good beginnings for something larger and more fruitful, but they have not attained to that dignity or power for hospital workers which I wish to advocate.

May I ask the members of this association to accept this as a fixed idea? Use every opportunity, encourage every small beginning to foster this plan, with the expectation that in due time some organization may find the place befitting it in the hospital world.

A backward glance is often profitable, but, proud as we rightfully are of the strides made by hospitals in the past twenty-five years, let us not forget that "the only value of a past is to get a better future out of it."

The trend to-day is to make the hospital more and more a great teacher.

Not forgetting that the chief function of a hospital is healing the sick, it is emphatically also the maker of doctors. It has already become an essential, indispensable part of a medical education. Formerly the instruction in the lecture room of the medical school was followed by perfunctory and haphazard walks through a hospital ward. Scores of students sauntered along between rows of beds and listened, at an almost out-of-ear-shot distance, about G—14 or P—23. A student rarely touched a patient, seldom listened to the physical signs, and never really studied a ward case. The surgical operations in the amphitheater could only be vaguely and unseeingly seen, but, thanks to the impulse given by the dominating idea of scientific investigation, all this is being changed. The best system now divides students into small groups, say of eight or ten each. Every student is forced to work out some phase of a specified disease. He sees the patient, he touches the patient, he comes in close personal conduct with the disease of the patient, and begins to get a grip on its meaning. When each student has

struggled with his part, separately, they come together to study the patient's disease as a whole. No practitioner gets experience save by contact. As Dr. Osler has somewhere said, "The whole art of medicine is in observation, but to educate the eye to see, the ear to hear, and the finger to feel takes time, and to start a man in the right direction is all that we can do." From another viewpoint, Dr. John S. Billings has well said, "Teaching hospitals are those where the patient is best observed, best cared for, and receives the greatest benefit." So it has come about in the evolution of medical instruction, that the arena of teaching has been transferred from the lecture room to the hospital wards. The hospital is the real school of the medical student. We must give him the vantage ground of the out-patients, for regular months of observation, manual dexterity, and allow him many hours at the ward bedside, seeing, hearing, questioning, recording, analyzing, as a basis for conclusions.

Then, too, he must have hours of laboratory work upon the pathology of the case, and this also the hospital must supply. Dr. Osler affirms that "for the student of medicine and surgery it is a safe rule to have no teaching without a patient for a text, and the best teaching is that taught by the patient himself."

But, perchance, some of you are opposed to this idea and dislike having students in your wards. Let us not forget that the very word hospital is, fundamentally, hospitality. For us to be inhospitable to new ideas is a sin past forgiveness. Progress is always interrelated and advance follows all along the line. Naturally, a progress in the training of nurses has taken place. The nurses of to-day go out from our hospitals not only enriched with large technical experience, but they have gone below the surface, they "know the reason why." And in this way, capable, self-sacrificing women are developed into highly intelligent, well equipped nurses.

Nor is this all. The hospital, large or small, not only educates doctors, trains nurses and promotes science, but it sets standards for the countless many who, for the first time in their lives, have a chance to see the value of cleanliness, the importance of details and the beauty of a well-ordered, self-contained life.

My friends, the world has intrusted us with a torch of our own, and whether it is a tiny taper in the window or a flaming beacon on the hill top, we can never know how far it throws its light, or who is being guided by it. Certainly, the best that we can do (and, indeed, it is the *least* that we *should* do) is to make *sure* that our torch is kept steady and burns clear.

FILTERED WATER FOR WEST PHILADELPHIA.—In order to supply all the people of West Philadelphia with filtered water, Director Acker has advertised for ten additional boilers to be placed in the Belmont Pumping Station. The Director expects that the additional boilers will be in working order by the first of the year. — *Medical News.*

Original Articles.

OBSERVATIONS ON THE COMPARATIVE VALUE OF DIFFERENT METHODS OF APPLYING PLASTER JACKETS IN SPINAL CARIES.*

BY E. G. BRACKETT, M.D.,
AND
L. R. G. CRANDON, M.D., BOSTON.

THE observations recorded in this paper were begun in the summer of 1902 and were made in the routine of the work in the plaster room of the Children's Hospital. The objects were to compare the various methods of applying plaster jackets with reference to their use in various regions of the spine; to ascertain whether there resulted any attendant evils, immediate or remote, from the attempt to obtain the greatest possible correction; to test the fork apparatus, and to determine a way of estimating the weight of the finished jacket at the time of its application, as well as the minimum weight for a durable jacket.

In the comparative study of the various methods which have been in use for the application of plaster jackets, no attempt was made to consider the relative merits of the treatment by plaster jackets with the brace treatment, but to compare the various methods of applying plaster jackets with reference to their adaptivity to different regions of the spine, particularly in hospital routine, where much of the work must be relegated. It was attempted in these observations to determine by which method the greatest amount of backward extension of the spine at the point of disease could be obtained, in such a way as to diminish most completely the pressure on the vertebral bodies. In determining this, not only the position of the spine at the region of the kyphos was observed, but also the compensating curves above and below. Fixation is but one of the objects of a plaster jacket, and the position in which the spine is held by it is necessarily of the greatest importance, but it is certainly a fact that the desired position is not necessarily uniform in all cases placed under the same conditions, nor can the best position of the spine be obtained by the same method in all cases. The comparative value of suspension and recumbency has already been considered by one of the writers[1] in a large series of experimental observations, in which it was found that, particularly in rigid cases, a greater amount of extension of the spine was obtained and less lordosis resulted by the methods of recumbency. It is well known that the position which the spine assumes in the application of a jacket is not always the same, but is influenced by the kind of apparatus used, and by the position of the disease, its extent, the amount of ankylosis, and more particularly by the degree of the existing, compensating curves. The curves of the spine

* The writers wish to acknowledge the valuable assistance in making these observations, rendered by Dr. Alice M. Gray.

[1] Transactions of the American Orthopedic Association, 1890, vol. viii, p. 153.

above and below knuckle are elements of much significance, for by them the balance of the upright position is influenced, and as the plaster jacket is usually employed for the ambulatory treatment, this question of balance or poise is most important. It is recognized that jackets are not desirable in all cases, yet, with many, it is the most efficient means of perfect correction and fixation, particularly so in hospital routine, where the home care of braces cannot always be depended upon.

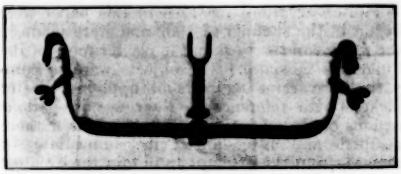


FIG. 1. — Forked upright, which is placed at level of kyphos.

Three different forms of apparatus were used in the application of the jackets: the hammock, with the patient in the prone position, and the rods and the fork, with the patient in the supine position.

The horizontal hammock method, first described by one of the writers [2] is that in which the patient lies face down on the cloth strip, drawn tightly by means of a windlass at the end of the frame, the sag of the hammock producing as much backward extension as may be desired. The sides of the cloth strip are then cut away, even with the width of patient, and this remaining portion, on which the patient rests, is incorporated in the anterior half of the jacket.

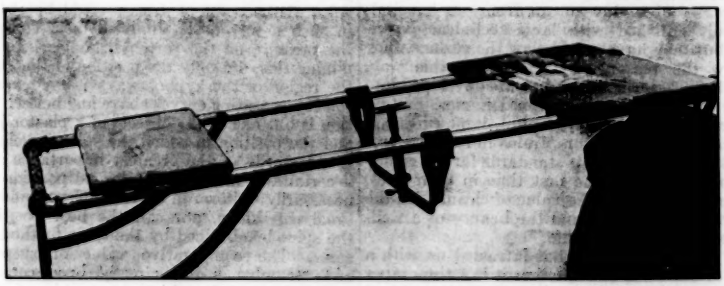


FIG. 2. — Fork, with the horizontal strips in position on frame.

The rod method is that described by Dr. J. E. Goldthwait,[3] in which the patient lies supine, resting on the two parallel, longitudinal rods, placed over the transverse processes, with their convexity adapted to the spine. The rods are removed after the application of the jacket.

In the fork method (see Figs. 1, 2 and 3), the patient lies supine on two short iron strips, 1½ to 3 inches in length, placed over the transverse processes, at a point just over and above the knuckle. These rods are supported on an upright, forked at its upper extremity, each fork terminating in a pin or peg which holds the iron strips in place. This forked upright is supported on a fixed upright, supplied with a thread and nut, by which the fork may be raised or lowered in order to give by this adjustment the desired amount of extension of the spine. The forked rod has been used for the support of a soft metal plate in the application of jackets for lateral curvature.[4] The special feature of this method in caries, however, is that it allows the patient to be placed on the apparatus in a position of comfort, and the desired amount of extension added, either before the application of the jacket or just after, but before the plaster has quite hardened. It is sometimes found difficult to adjust the patient to the requisite amount of extension until it has been in position on the frame for a few minutes, and this method gives opportunity for such adjustment.

The method of conducting the experiments was as follows: Before the application of the jacket the patient was placed prone on a table, and a tracing over the spinous processes taken. The patient was then successively placed in position by the three methods, — on the hammock, the rods and the fork, — and the attempt made to give the greatest amount of backward extension at the point of disease, at the same time to obtain the greatest possible amount of correction of the compensating curves. Tracings of the position of the back were taken in these three positions, and the method which gave the greatest amount of correction was used for the application of the jacket.

To obtain the tracing of the spine before the application of the jacket, with the patient on the table prone, and in the ventral position on the hammock, the tracer devised by Young [5] was used, but neither this nor any other pattern at hand sufficed when the patient was placed in the supine position. To accomplish this view a

[2] Transactions of the American Orthopedic Association, 1890, vol. viii, p. 153.
[3] *Ibid.*, 1898, vol. xi, p. 89.
[4] BOSTON MEDICAL AND SURGICAL JOURNAL, 1899, vol. cxli, p. 277.
[5] *Ibid*, 1896, vol. cxxxiv, p. 170.

special tracer was devised (Figs. 4 and 5) by which the spinal outline could be taken from beneath, while the patient was lying supine on the rods or fork. This consisted of an iron bar, through which a series of round rods were made to slide, each provided with a set screw. This bar was so arranged that it could be hung on the cross bars of the frame beneath the patient. With the tracer thus fixed to the apparatus on which the patient was lying, the different rods could be adjusted to the curve of the spine, and the outline of the spinous processes accurately recorded. On account of the upright which served as a support for the ends of the rods and for the fork, it was necessary that the tracer be provided with an extension, in order to include that part of the spine above the point of disease in the tracing. The two tracers, the Young and that just described, being so similar in principle, it was easy to compare the records taken by them.

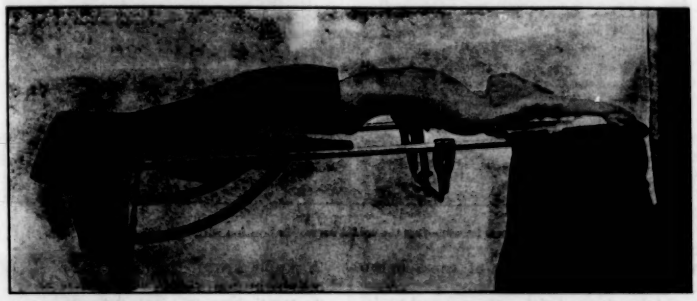


Fig. 3. — Patient in position on frame supported by fork, the level of the deformity.

For observation, the cases were grouped into the usual regional classification of lumbar, dorso-lumbar and dorsal, both mid and high. The cervical cases were not included in these experiments. The main question considered was whether in cases of disease in the various regions of the spine there was any real correction of the deformity itself, *i. e.*, a correction of position in which the intervertebral pressure at the point of disease would be relieved by the over-extension at this point, independent of the change in the curve above and below, and at the same time to compare the results obtained with the different forms of apparatus. These were not studied with reference to the effect which might be had under conditions of exceptional convenience, or by unusually skilled individuals, but rather under the necessarily hurried and incomplete methods in a hospital out-patient department outfit.

The same observations, that is, of extension of the spine by different methods, were also made upon normal spines, but the results obtained in these normal cases are not directly applicable to cases of disease, for it is comparatively easy to bring about the desired amount of extension in almost any region of the normal spine and by almost any method. These methods of record showed, as did that by Hall[6] that the normally flexible spine adapts itself to the horizontal plane of support, and it was found that the loose hammock is, for a normal spine, the best position of extension and even with a mid or low dorsal caries, with the spine not rigid and free from curves of compensation, it gives no undesirable increase of lordosis, but produces a diminution of the kyphos, by the extension of the spine on the knuckle. But limited motion, ankylosis and the accompanying stiffness of the spine

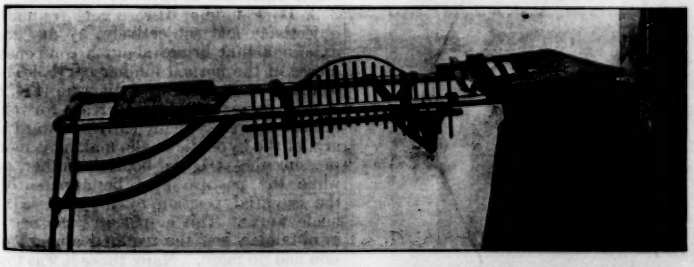


Fig. 4. — Apparatus devised to measure and record the spinal curves before the application of the jacket at each visit.

[6] Boston Medical and Surgical Journal, 1896, vol. cxxxv, p. 288.

in disease, however, make the condition in these cases so different that the results with normal spines cannot be used as a guide.

The records of the cases extending over a long period of time were made by

kyphos, thighs flexed to diminish or obliterate the exaggerated lumbar curve.

(*c*) Ventral position on hammock, tight and loose respectively, applied in

1. The usual fully extended position.

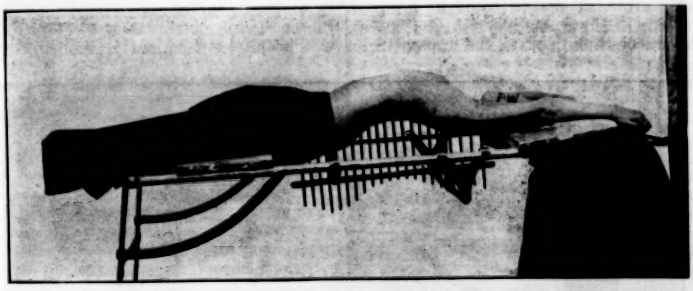


FIG. 5. — Apparatus (tracer) for recording the spinal curves, in position with the patient on the frame.

I. Tracings and photographs of cases before the jackets were applied, in[7]

(*a*) Dorsal decubitus (with rods and fork) with



FIG. 6. — Left line shows the normal lumbar curve below the kyphos of dorso-lumbar caries.
Right line shows the lumbar curve unduly increased; with this increase the angle of the kyphos is made more acute. This defeats the object of treatment.

the apparatus arranged to produce the greatest correction at level of kyphos.

(*b*) Dorsal decubitus, maximum correction at

[7] The application of the jacket in the prone position with the legs flexed and the upper portion of the trunk thrown into extension by the apparatus during the application of the jacket, has since been described by Dr. Lovett. (Am. Med. Sept. 2, 1902.) At the time of these experiments this method had not been shown or it would have been used in making these comparisons.

2. Applied with thighs flexed by letting them through the hammock.

3. Applied up to level of kyphos, the child let up, jacket held firmly, while spine, from kyphos up, is forced into hyperextension, and the jacket built up and finished in this position.

II. Successive tracings of spines treated persistently by any of these methods.

The conclusions as to results of this study are as follows: Cases treated persistently by any one method.

1. Lumbar disease improves steadily under any one method, the more hyperextension apparently the better, with the balance in the favor of the hammock method. The loose and tight hammock give about the same results, with a slight difference in favor of the loose.

2. Dorso-lumbar disease gets gradually worse, objectively and subjectively, by any method of extension that brings about a compensatory increase of the normal lumbar curve. The reason of this is made clear by a diagram (Fig. 6) where it may be seen that an increase forward of the lumbar convexity really carries forward the lower arm of the kyphotic angle, making it more acute, pressing the vertebral bodies together, and thus, while the posture may be apparently better, the essential position of the diseased parts is made worse. This emphasizes the need of care in obtaining just the required amount of extension and no more. Many times it was found that the child was apparently given the necessary amount of extension, but after the application of the jacket it was proved to be too much, and so increased rather than diminished the postural defect. Over-extension must be used to overcome the pressure in the bodies, but it should be limited to the point where, if carried further, it will interfere with the natural balance.

3. Mid-dorsal disease.

(*a*) Placed face down, on hammock, is not

held well and tends to get worse, particularly in the hands of the average assistant.

The reason is evident. In this position the patient rests on the abdomen and face, and the hammock is not in contact with the patient



FIG. 7. — Mid-dorsal disease. Jacket applied with the patient lying face down on the hammock. A space has been left between the chest and the jacket, into which the patient sags when upright as shown.

above the lower portion of the sternum. Thus when the jacket is applied a space is left between the front of the jacket and the chest, into which the patient falls forward. The practice of cutting a hole in the hammock for the face, naturally should be condemned, for it allows the same forward sagging, which it is the object of the support to prevent. (Fig. 7.)

The best results with the hammock in mid-dorsal disease are obtained by the methods in which the lower portion is applied in the hammock, and the patient sits up hyperextended to have applied that part of the jacket which is above the level of the disease. (Fig. 8.)

(*b*) Placed on the back, on the iron rods, or on the fork, mid-dorsal cases improve, or at least get no worse, provided the compensatory lumbar curve is not increased over that which is voluntarily assumed by the patient when placed in this position. This was proved by a series of experiments.

4. High-dorsal disease is not difficult to hold in good position.

(*a*) Placed face down, on the hammock, gets gradually worse.

(*b*) Lying on the back, with either means of dorsal support, may in some cases be held as they are, at least if it is possible to produce much hyperextension, and the jacket is carried very high in the front. Postural defects, however, follow this method, and it is evident that the jacket form of support is rarely applicable to these cases.

The best results in high dorsal disease follow jackets applied with patient placed hyperextended with one of the methods of dorsal support in the supine position, with the jacket carried high in front with a chin support incorporated. "Best results" is here used to mean best results obtainable where plaster is used as a means of fixation. It does not mean to include comparison with metal braces or recumbency.

As a result of the observations with reference to whether the greatest possible pressure applied forwards at the kyphos resulted in attendant evils, the following conclusions were made:

I. On a rigid kyphos at any level above the lumbar region too much correction by the rods or by the fork method produces an increased lumbar curve by voluntary compensation. This for two reasons:

(*a*) When the load line is thrown back of the base of support, the patient as a result bends

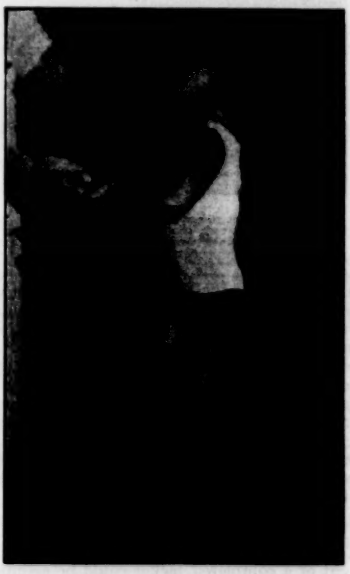


FIG. 8. — Mid-dorsal disease. Jacket applied up to the level of the disease with the patient lying face downward on the hammock. The upper part of the jacket applied with the patient erect and hyperextended.

forwards from the hips and walks with knees flexed. (Fig. 9.)

(*b*) When the load line is thrown forward of the base of support, the child cannot balance

except by leaning backwards from the hips, thus compressing the abdomen and interfering with respiration. The effect of this is frequently seen in panting respiration. (Fig. 10.)

II. The attempt at correction of lordosis by



FIG. 9. — Jacket so applied that the load falls back of the base of support. The patient must walk bending forward and with knees flexed to preserve the balance.

flexed thighs in the supine position by any method is distinctly to be avoided. This condition of marked, compensating, rigid lumbar curve is practically met only in cases of long standing, and the relative angle between the extending thighs and the pelvis has apparently become changed from the normal angle to one of less degree. If the lumbar curve is too much corrected by this means it becomes impossible for the child to completely straighten the legs when standing. He must, therefore, stand with knees bent or leaning forward, with trunk flexed on the thighs.

WEIGHT OF JACKETS.

To determine some method by which the weight of a completed jacket could be estimated during its application, a record of the weight of the jackets was taken. Much difficulty has always been experienced in gauging the weight and thickness of the jackets, and especially so in a hospital practice where assistants have not had long training in plaster work. One cannot easily judge of this at the time of applying the jacket, for the amount of plaster put into the rolls varies to such an extent that the number of rolls is not a reliable guide. It was found that with care in squeezing the water from the bandages, that only a little of the plaster was lost, and that the weight of the rolls before wetting was a sufficiently accurate guide, and gave a satisfactory indication of the relative weight of the jacket after application. That is, the percentage of loss was practically uniform. The number of rolls with their weight was recorded before the application of the jacket, and care taken to squeeze as little plaster from the rolls as possible, and to apply the jacket as near as possible to the dimensions above and below as would later be required, so that there should be as little trimming as possible, and when much trimming was required the amount removed was recorded. When the patient returned for removal of the jacket, the weight of the jacket at its removal was recorded, as well as the time of wearing each jacket, with its condition at the time of removal. In this way a record was obtained of the weight of the jacket, the amount of plaster and rolls used, the length of time it was worn, and its condition after this amount of use. This could be compared with the size



FIG. 10. — Jacket so applied that the load falls forward of the base of support. The patient must lean backward to preserve balance. This compresses the abdomen unduly and causes panting respiration.

of the child and a schemic table made. In making these observations the following card was

used, which was found to be of much convenience. (Fig. 11.)

The age of the patients on whom the observations were made varied between three and eleven years, the number of rolls used between six in a child of three, and eleven in a child of eleven. None of these cases wore the jackets for the long period (six months), but the time of wearing varied between three and ten weeks. At the time of removal the weight of the jacket was recorded, and as the trimming at the time of its application was considered, the difference in weight gave an estimate of the amount of shrinkage in drying, and the loss of plaster in squeezing and by drying. This was found to average approximately 9% of the weight of the rolls before wetting. In some instances the recorded weight at the time of removal was slightly more than that of the rolls; this error was recorded and the explanation for the difference lies between a mistake in weighing or an increase by absorption of moisture.

The average weight of jackets which were recorded as in good condition at the time of removal for the different ages was as follows:

3 yrs.	.....	1 lb.	14 oz.
4 "	.....	2 "	2 "
5 "	.....	2 "	6 "
6 "	.....	2 "	14 "
7 "	.....	2 "	7 "
8 "	.....	2 "	6 "
9 "	.....	2 "	12 "
10 "	.....	3 "	0 "
11 "	.....	2 "	14 "

Five of the jackets were reported as not returning in good condition. They were all of the light weight, and two of them being below the average for the age, one being 2 lbs. 4 oz. for a nine-year-old child, and one 2 lbs. 3 oz. for a seven-year-old child. Much care was taken in the application of all jackets to lay the rolls evenly and to rub thoroughly, and the large proportion of jackets of light weight returning in good condition was in a measure due to this. It is not claimed that the lightness of the jackets is at all remarkable, but they fall much below the usual weight of those found in the clinic.

The minimum weight of a durable jacket, considering the age of the patient, was 1 lb. 4 oz. on a three-year-old, 1 lb. 12 oz. on a five-year-old, 2 lbs. 4 oz. on a nine-year-old, and 2 lbs. 6 oz. on an eleven-year-old child.

SUMMARY.

Lumbar disease improves under any method, but with the balance in favor of the hammock.

Dorso-lumbar and dorsal disease shows a gradual increase by any method of extension that brings about a compensatory increase of the normal lumbar curve.

High dorsal (4th) may be held by either form of dorsal support, provided the jacket is carried high in front. Care is necessary, however, to avoid postural defects.

The ventral position is adapted for all cases of lumbar disease. It is also applicable to dorsal cases, when the portion covering the anterior chest is left until the patient is removed from the hammock, and the jacket finished in the sitting posture, with the patient held back in the extended position.

The dorsal position is adapted to disease in either the lumbar or dorsal regions, but particularly to the dorsal. The fork is rather the more applicable to the dorso-lumbar and lower dorsal, and the rods to the higher dorsal cases.

In the old cases with deformity care must be taken to avoid lordosis. The control of this by the flexed thighs is more apparent than real.

The poise or balance in the standing position after the application of the jacket is a valuable guide and should be taken into account.

The most accurate way of estimating the weight of the finished jacket is by the weight of the rolls before wetting. The shrinkage in weight is equal to about 9% of the rolls before wetting. A jacket of about 1 lb. 12–14 oz. should

NAME: ; REF.: ; AGE: ; HEIGHT: ; SITE OF DISEASE:

DATE.	NO. OF ROLLS.	WT. OF ROLLS.	METHOD.	POSTURE.	ASST.	DATE.	WT. OF JACKET.	CONDITION OF JACKET.	POSTURE AND REMARKS.

Fig. 11.

be sufficient for a child of three to five years of age, and a jacket of 2 lbs. 10 oz. weight sufficient for a child of from ten to twelve years.

TREATMENT OF CHRONIC PROSTATIC ENLARGEMENT.*

BY JAMES PRINCE LEWIS, M.D., BOSTON.

DURING the past few years this subject has assumed a position of importance which can hardly be overestimated, undoubtedly due to the improvements in technique instituted abroad and in this country for prostatic enucleation. That this agitation is bearing fruit can be seen in the increasing number of operations with an ever-lessening mortality and the rescue from long periods of suffering of many who would have been formerly offered but slight hope of permanent relief, but which now, thanks to modern surgery, can be reasonably assured of a more or less permanent return to health and comfort.

Prophylaxis. — Before taking up the treatment of this condition a brief glance at the etiology is in order, that we may intelligently direct our efforts toward its prophylaxis. Among the best articles upon this subject that of Crandon is especially worthy of notice, and while his conclusions are not concurred in by some experimenters, yet they are accepted by the majority and can form the basis of our deductions. Stated in brief, any pre-existing inflammatory condition of the lower urinary tract is a predisposing factor, and as gonorrhea is responsible for the greater part of such inflammations, its prevention and early cure may be of value.

The treatment itself may be considered as palliative and radical, the first aiming only at the alleviation of the condition, but of immense importance to the general practitioner upon whom much of this work devolves.

Dilatation. — One of the simplest methods of obtaining a free passage is dilatation of the prostatic urethra by the systematic use of graded sounds, which may or may not be left in *situ* for a short time. Its precise action is not known, but it is supposed to cause atrophy of the mucosa. It is applicable only to a certain limited number of cases and has its most ardent advocate in J. William White who says: "A patient who presents the symptoms of the prostato-vesical congestion of the early stages of hypertrophy, who is disturbed once or twice at night, who has an enlargement of moderate density, appreciable through the rectum, but not offering much resistance to the introduction of an ordinary catheter, and who has but little residual urine, is likely to derive great benefit from the systematic introduction of full sized steel sounds." Most other writers mention this method only to condemn it, obtaining, as it does, but temporary relief at a time when the patient's condition is probably the best fitted for more active measures.

Catheterization. — On the other hand, many and diverse opinions are expressed regarding the value of catheter life as opposed to operative procedures, and while the operative advocates are constantly gaining in numbers as the advantages of early removal become more manifest the catheter holds a place not easily usurped. Its widest scope of usefulness is perhaps that practised by Thorndike, whose opinions may best be expressed in his own words: "After throwing out that class of patients who by reason of their surroundings, ignorance, or lack of decency and cleanliness are manifestly unfit subjects to enter upon catheter life and also those who are unwilling to undergo its tiresome routine, there are a large number left who can be made comfortable by a more or less constant use of the catheter and these should not be advised to have an operation until such time as the catheter ceases to palliate," meaning by that when the symptoms are becoming more severe and the residual urine increasing in amount. He also points out that those cases with a chronically distended bladder should be systematically catheterized for some time before operating, in the hope that the organ will regain its normal tone by the gradual relief of pressure. There are again cases of obviously bad surgical risk, either by condition of the heart, vessels, kidneys or some complicating disease in which all agree that it is better to temporize for a time at least. It has been shown by Arthur F. Cabot that constant drainage through an inlying catheter may restore the function of kidneys seriously disabled and even patients in a pronounced uremic condition, as evinced by nausea, somnolence or restlessness, may be brought back to a state of health in which they may safely undergo operations whose performance would have probably been fatal a little earlier. In many of these cases, however, and particularly those with very foul bladders, where adequate drainage is such an important feature, it is a question whether suprapubic incision or perineal section were not the better surgery. These can both be done under nitrous oxide, local or spinal anesthesia, consuming at the most but a few minutes, with practically no shock to the patient. They allow a more complete evacuation of the bladder contents and have the further advantage of being preliminary to the removal of the gland, if that is performed later. On the whole, we are becoming more inclined to use the catheter less and to operate more. If a man comes into our office with a moderately enlarged prostate and its accompanying symptoms, we do not now feel justified unless we tell him about his chances for a cure. We will say that he can be operated upon with nineteen (19) chances out of twenty (20) of getting practically complete relief, one chance in twenty of dying and about one chance in a hundred of having a more or less permanent fistula resulting. We will also say that by the proper use of a catheter he may be made comfortable for several years and that at the end of that time some operative intervention will probably be demanded and then we will advise him according to our belief. If performed at this time, the mortality of pros-

*Read at the quarterly meeting of the Rhode Island Hospital Club, Sept. 6, 1905.

tatectomy is practically *nil* in the hands of a reasonably skilled man and it seems probable that it will more and more become the procedure of choice.

Castration, etc. — We pass now to those operations which produce their results indirectly, and, while at times valuable, have proved themselves generally unsatisfactory. I speak of castration, vasectomy and ligation of the iliac arteries. The high mortality attending the first, as shown by Cabot, together with the inability to foretell which cases are likely to yield favorable results, and, finally, the relatively small proportion of cures obtained, have caused the loss of popularity which for a time it enjoyed after its introduction by White, notwithstanding the remarkable results at times achieved. Vasectomy, while it does not have so high a mortality, cannot show as good results, and ligation of the iliac arteries is of even less value. The injection of carbolic acid and iodine and electrical applications are also mentioned only to be condemned.

False Routes. — Drainage of the bladder, either by perineal section or suprapubic cystotomy has already been mentioned while speaking of the catheter. As a preliminary step in the removal of the gland, the suprapubic incision is advocated by Cabot, Lilienthal, Crandon and others, in those cases complicated with very foul cystitis, attacks of vesical hemorrhage, phosphatic calculus formation, beginning uremia or other serious conditions where the need of such drainage is imperative and the patient's condition prohibits extensive procedures. This could be followed in about ten days by the customary suprapubic operation, if considered advisable, at which time a perineal vent might well be left in addition to the other, many surgeons testifying to the value of such counter drainage. It is also important to note that in certain forms of enlarged prostate due to a chronic inflammatory process, simple drainage may suffice to completely relieve the symptoms, the gland becoming apparently normal in size in the course of a few weeks.

Bottini Operation. — The last of the palliative procedures and one which has been the subject of much controversy is the Bottini operation. In this, as you know, one or several channels are burned through the obstructing prostate by means of heated knives. This method at one time enjoyed very wide-spread favor, there being claimed for it the absence of shock, quick convalescence and avoidance of general anesthesia, and it was advocated by many surgeons of repute as the operation of choice when the patient's condition was considered too serious to make the risks of prostatectomy justifiable. At the present time, however, it can no longer be considered as an available operation, chiefly because it is work in the dark with all that that entails. There is great liability to sepsis and secondary hemorrhage, sufficient drainage is not provided and untoward results are common enough to render the outcome always in doubt.

Spinal Cocainization. — One of the chief advantages of the Bottini operation was that it obviated the use of a general anesthetic, the local application of cocaine being sufficient. The reports of Morton, and, more recently, those of Young and Tinker show that general anesthesia is now not necessary for the most extended operations. Morton, a year ago, had operated upon nearly 700 cases under spinal cocainization without a failure, breast dissections and others of a like nature being among the number. Young has lately reported ten cases of perineal prostatectomy by this method with complete success. The technique to be preferred is that of Morton and has the advantage of not increasing the amount of fluid in the spinal canal. The spinal fluid is withdrawn, preferably in a Luer syringe, between the third and fourth lumbar vertebræ, in which is immediately dissolved 0.3 gr. of powdered cocaine and the whole reinjected. None of the unpleasant sequelæ, such as were reported by the old method, occurred in these cases. Tinker has also recently performed perineal prostatectomy under local injections of β-eucaine with entire satisfaction. It can thus be readily seen that many cases whose general condition would prohibit the use of ether or chloroform, may yet undergo prostatectomy without pain and without the added shock which general anesthesia necessitates.

Malignancy. — Before passing on to more radical procedures, an analysis of some statistics recently published by Dr. Tenny is interesting as bearing upon the question of palliation versus total removal of the prostate. He found that during the last five years there were recorded at the Boston City Hospital and Massachusetts General Hospital, ending June, 1905, 362 cases of enlargement of the prostate, and that out of that number 33 or over nine per cent (9%) were malignant. Two cases recently operated upon in the Rhode Island Hospital were found to be carcinomatous, although not suspected at the time. These facts, it seems to me, afford an argument in favor of early enucleation when the method of treatment is in doubt.

Prostatectomy. — That prostatectomy is the operation of choice when it is warranted by the condition of the patient is generally conceded and the lowered mortality statistics which have been recently published go far to strengthen this feeling. These results are due to two factors, — better technique and a better selection of cases. By the latter I do not mean that desperate cases have been refused operation, but that the profession is now recognizing the advantage of operating before the patient's strength has been greatly impaired while palliative measures are being employed. The exact indications for prostatectomy, however, vary with different authorities. All agree that prostatectomy should never be an emergency operation, and to those cases whose condition demands immediate interference, drainage, either suprapubically or through the perineum, should be instituted, to be followed later by enucleation if the patient's condition warrants it. Murphy says that the indications for prostatectomy are:

1. Prostatic enlargement to a pathological degree.
2. Painful and frequent urinations.
3. As a cure for catheter life.
4. As a cure for secondary cystitis.
5. For the relief of pressure on the rectum.
6. Priapism in the aged with perineal irritation.

Goodfellow declares that "there are no contra-indications to the operation unless the condition of the patient is such that no operation of any kind is warranted." Surely a strong statement and very significant when we realize that his statistics show one of the lowest mortality rates yet made public. Watson says that "patients should be given the benefit of radical operative treatment at a much earlier stage of the malady than it has been customary to apply it, and that when it is applied by those skilled in its performance as soon as the hypertrophy can be clearly detected by examination, and if, at the same time, it is already giving rise to well marked symptoms, and the patient's condition is not unfavorable to a performance of an operation of this magnitude, the mortality of the operations, were they applied at that time, would be a trifling one and their risks not nearly so great as those entailed by the use of the catheter, assuming the latter to have been employed instead and under the same conditions." Follen Cabot advises prostatectomy "on the earliest evidence of urinary obstruction," long before the habitual use of the catheter becomes necessary. From the above statements it would seem that the majority of surgeons favor an early operation and that that operation is prostatectomy when warranted by the condition of the patient, to be determined in each individual case.

Choice of Methods. — As to the choice of operation, we have two avenues of approach, — through the bladder from above and through the perineum from below. While the technique of the former method has changed but little, that of the latter has made considerable advancement, principally through the work of the French surgeons and Young of Baltimore. These changes consist in bringing the prostate down into the wound by the use of different kinds of retractors, of which that of Young is probably the best, thus making the operation one carried on under the direction of the eyesight and so facilitating the preservation of the urethra and ejaculatory ducts. Many patients operated upon by this method retain or regain the power of erection and coitus, and motile spermatozoa are frequently found in the seminal fluid. On the other hand, many of the best surgeons are performing the perineal operation without regard to these structures and have demonstrated conclusively that the entire prostatic urethra may be removed with uniformly good results, although the virility of the patient is usually lost.

To sum up the advantages of the perineal over the suprapubic route we find *first* that it has a smaller mortality, for in a comparison of the mortality statistics of the French, English and American surgeons for the last three years, I find that, whereas the suprapubic operations show 6½% of deaths, only 4% can be credited to the perineal method, a saving of 2½% in the risk. It is but fair to note, however, that in view of the closeness of the figures, this advantage is more theoretical than real.

Second. The perineal operation enjoins a shorter convalescence, patients averaging one week longer in bed when operated upon by the upper route.

Third. Continuous irrigation, which is important in preventing the formation of blood clots, can be more easily and satisfactorily arranged through a perineal opening.

Fourth. With improved technique is obtained a better preservation of structures, and consequently, of virility.

On the other hand the advantages of the suprapubic route are:

First. It allows an exploration of the bladder with greater facility, thus enabling the operator to more easily detect and treat new growths, diverticulæ and large calculi.

Second. There is less liability to injure the rectum with subsequent fistula formation.

Third. The necessity for a preliminary cystoscopy is obviated.

Fourth. In certain cases where the enlargement is of the middle lobe and extends well up into the bladder, its removal is more easily effected by the suprapubic route.

Fifth. And again, if the prostatic hypertrophy lies surrounded by a mass of dense tissue, the result of repeated attacks of inflammation, the suprapubic offers the best method of approach.

We can thus see that the employment of either one of these methods to the exclusion of the other would not be in accordance with our best knowledge. On occasions wherein the choice of operation is in doubt, a perineal opening may well be made, through which the exact conditions can be the more readily determined. If, after such an examination, extraction of the prostate through the incision is decided against, the customary suprapubic incision may be made, using the other for drainage only. By whichever of these various means the individual surgeon learns by experience he can best accomplish the purpose, that one is the best for him personally to use, but other things being equal, the perineal route is undoubtedly the method of choice. Let us not, however, allow this rather detailed consideration of the relative merits of the operations blind us to the fact that the important point to be decided, the elucidation of which will accomplish the most ultimate good, is not how but when to operate.

Before concluding, I have here a rather incomplete list of surgeons who have lately put themselves on record as favoring one or the other operation, which I think might be of interest. The suprapubic route is preferred by Moynihan, Freyer, McGill, Deaver, Eugene Fuller, Lilienthal, J. W. White and Crandon.

The perineal method is advocated by Albarran, Cabot, Watson, Young, Murphy, Gouley, Goodfellow, Syms, Proust, Pilcher and Follen Cabot.

CONCLUSIONS.

1. The use of sounds is generally to be condemned.

2. The sphere of usefulness of the catheter is growing smaller and smaller as the advantages of an early operation make themselves manifest.

3. The Bottini operation may be applicable in selected cases, but should seldom, if ever, be adopted.

4. Orchidectomy, vasectomy, ligation of the internal iliacs, injection of carbolic acid, application of electricity and allied methods are to be condemned.

5. Prostatectomy is the procedure of choice, best performed when the symptoms first make themselves manifest and the patient's condition is presumably at its best.

6. The preferable route is through the perineum, the preferable method that of Young or one of its modifications, but much depends upon the skill of the operator as regards the method employed.

7. In patients with foul bladders and diseased kidneys who, we have reason to expect, would not stand an extensive operation, thorough drainage should be first instituted either by a suprapubic or perineal incision under local anesthesia, to be followed later by enucleation, if deemed advisable.

8. The use of local anesthesia, especially spinal cocainization, is of great value, and should be more extensively employed.

Clinical Department.

AMBLYOPIA FROM THE FUMES OF WOOD ALCOHOL.

BY ALFRED T. HAWES, A.M., M.D., LYNN, MASS.,
Attending Physician at Lynn Hospital.

On the morning of Oct. 5, 1905, C. B., age fifty-three, a painter by occupation, began the work of cleaning the paint from old furniture and applying shellac to the floors of three rooms. He continued this work for three days when he was obliged to give it up on account of the sickness caused by the fumes of the wood alcohol which he was using.

The patient was a strong, well-built man of sober and industrious habits. Used tobacco rather constantly and had done so for years, smoking a pipe while at work. His eyesight was good and only occasionally he used glasses for reading. Although indulging moderately in alcoholic stimulants, he was fully aware of the dangers of drinking wood alcohol. He had taken nothing of an alcoholic nature while at work at this place and during this time had had only one or two whiskies at night which he obtained and drank at at saloon.

He used wood alcohol to remove the old paint from the furniture and in mixing his shellac. His work consisted in pouring a quantity of wood alcohol on the furniture, rubbing it with a cloth and then applying more. None of the rooms in which he was working was larger than 10 x 12 feet, and as a breeze was blowing through the house, he closed the doors and windows to prevent evaporation of the alcohol.

The first day, after being in the closed room for some hours, he began to suffer from headache, nausea, a faint feeling and some smarting of the eyes, but after being in the open air, he felt relieved and continued the work.

The second day he was in the closed room all day and suffered from the same symptoms, and while walking home at night, he noticed a slight blur before his eyes as if a veil were hanging in front of them. He went to his room to wash for supper and felt so miserable that he sat down in his easy chair and slept until 10 o'clock P.M. and then went to bed without any supper.

The next morning he started to work but was unable to do anything and about 8.30 A.M. gave up and went home. The blur before his eyes had increased and the symptoms of headache, nausea and faintness were intense. His mind was confused and he had no clear memory of what occurred. He lay down on his bed and about noon a physician was summoned. Some relief was obtained, but during the following night he became worse and was admitted to my service at the Lynn Hospital.

I saw the patient for the first time about 4 o'clock A.M. He was in a semi-conscious condition, was able to talk but speech was unintelligible. The temperature 100°, pulse 108, full and strong, respiration 20. The pupils were widely dilated and irresponsive to light. Patient was extremely restless, turning from side to side and resented any attempt at restraint. After a time he quieted down and obtained some sleep. Urinary examination was negative.

At 9 o'clock the same morning his mind was perfectly clear, although his memory was somewhat hazy concerning the events of the preceding night. He complained only of some headache and his inability to see. He could, however, count the number of persons in the room and could see a hand passed before his face.

Examination of the fundus by Dr. Jones showed some blurring of the disc of right eye and contraction of the arteries in left eye.

The temperature for the first five days was somewhat irregular, 100° in the morning and between 102° and 103° at night. It then came down to normal or practically normal and remained there. The unpleasant symptoms rapidly cleared up although some headache remained for several days.

Treatment consisted of elimination by the kidneys and bowel and gradually increasing doses of strychnia. A tolerance of strychnia was established and the patient was taking $\frac{1}{15}$ gr. four times a day without any toxic effect.

Fifteen days after admission, examination of the fundus showed the conditions practically unchanged. At this time there was no vision whatever. He could see no shadow of objects passed before his eyes and could not tell in which part of the room a window was located. The pupils had remained persistently dilated and a strong electric light held directly before the face caused no reaction of the pupils.

At a recent meeting of the Painters' Union it was voted that the use of wood alcohol in the preparation of paints should be prohibited and its members have refused to use it in their work. Committees have been appointed to send to the Unions throughout the state literature concerning its dangers and to ask for legislation governing its manufacture.

Most of the warnings in regard to wood alcohol have been to avoid the possibility of its use for drinking purposes. In view of its enormous use in the manufactures, the dangers of inhaling its fumes in closed places ought to be more widely known.

PERILOUS PATRIOTISM.

BY WALTER KEATE, M.D., SALT LAKE CITY, UTAH.

JOSÉ ABRIL, aged twenty-two years, a Mexican "ranchero," while celebrating a national holiday, picked up two sticks of giant powder, one in each hand.

The fuse was burning rapidly, and before he could throw them away they exploded in his hands, literally blowing them off and entirely destroying both eyes. His face, neck and chest were badly burned, and there was a compound fracture of the superior maxillary.

He presented one of the most pathetic pictures a surgeon could be called upon to deal with, and his own relatives could not recognize him. He was brought into the Nacozari (Mexico) hospital at 4 A.M., just ten hours after the accident had occurred, he having to travel six miles in a wagon.

His pulse was 130 and very weak. Temperature was sub-normal. Respiration 28. Stimulants, heat, etc., were at once administered. Professor Whitmoyer etherized and the nurse assisted me.

We amputated both arms in the lower third, removed numerous small bones from the superior maxillary and did an evisceration of the right eye. Many small rocks and pieces of copper caps were removed from the face, neck and chest. The operation lasted forty minutes, and the patient looked as though he would never regain consciousness, but after two hours with the administration of stimulants he was able to talk.

He remained in the hospital three weeks, making a good recovery. He has a wife and two children.

His unbounded patriotism for the Mexican flag, in endeavoring to preserve it from being blown to pieces, caused him to lose his hands and eyesight.

Medical Progress.

REPORT ON PROGRESS OF SURGERY.

BY HERBERT L. BURRELL, M.D., AND H. W. CUSHING, M.D., BOSTON.

(Continued from No. 18, p. 498.)

AN EXPERIMENTAL AND HISTOLOGICAL STUDY OF CARGILE MEMBRANE.

A. B. CRAIG:[7] This article is divided into a study of the efficacy of the membrane in preventing adhesions in the abdominal and cranial cavities and around nerves and tendons, and the ultimate fate of the membrane in the tissues. Many experiments have been done, and the conclusions drawn from these experiments are as follows:

1. The most distant time at which we found unchromicized Cargile membrane existing intact, macroscopically, within the peritoneal cavity, was the fourteenth day; in most instances it had disappeared to macroscopic view much sooner. The earliest time at which we found the membrane had disappeared over the area of actual denudation was on the third day.

2. Unchromicized Cargile membrane when buried in living animal tissue, as when placed around tendons and nerves, or in muscle, is apparently absorbed sooner than when placed within the peritoneal cavity. In no instance was so much as a fragment of the membrane observed macroscopically so late as the fifth day, though in the fragmental state membrane was noted microscopically so late as the fourteenth day.

3. Chromicized Cargile membrane, when placed within the peritoneal cavity or when buried in living animal tissue, remains unabsorbed much longer than does the unchromicized variety. The two varieties doubtless bear relatively the same relation to each other, so far as absorbability is concerned, as do chromicized and unchromicized catgut.

4. While the unchromicized, and to a less extent the chromicized, variety will adhere fairly firmly to a surface denuded of peritoneum when such surface is relatively dry, yet neither can be depended upon to remain where placed, unless anchored by some method, in a situation which is subject to peristaltic activity.

5. A logical deduction from the results of the foregoing experiments seems to warrant the belief that neither variety of the membrane is of value in preventing adhesions within the peritoneal cavity. In every instance the membrane, until absorbed, appeared to act as a foreign body, and therefore as an irritant.

6. We believe from the results of our observations that both varieties of the membrane are of value in preventing adhesions to wounded nerves and tendons when such structures lie in tissues which have been subjected to trauma, operative or otherwise. Our conviction is that for this purpose the chromicized is the more valuable.

7. We believe that several layers of either variety of the membrane when placed around tendons or nerves afford a safer and better protection than one layer.

8. We believe that, when used in the cranial cavity to replace destroyed or removed dura, the unchromicized variety would be exceedingly difficult to handle on account of its being unmanageable when moist, and we further believe, on account of the rapidity with which it dissolves, that it would be of no special value in this situation even though it could be used with ease. Owing to the facility with which the chromicized variety can be handled, its greater toughness and increased power to resist absorption, we believe that it would prove of greater value in replacing the dura.

9. Our studies indicate that the membrane is destroyed by a lytic substance, or substances, contained in the body fluid. The celloidin capsule experiments, even though bacteria were present in one, show that the membrane is softened, and at least partially absorbed by body fluids without the presence of cells. In the tissues it is split into fibrils, this change being accompanied or followed by the penetration of

[7] Annals of Surgery, June, 1905, p. 801.

formative cells of the new tissue enclosing it. Fragmentation, disintegration and absorption finally ensue. Phagocytosis may safely be excluded as a chief important contributing cause.

THE TREATMENT OF STRYCHNINE POISONING AND OF TETANUS BY SPINAL ANESTHESIA.

A. E. Russell [8] suggests this method of anesthesia to be of value in the treatment of tetanus. He quotes a case in which Dr. J. B. Murphy [9] used morphia, eucaine and salt solution by spinal injection in a case of tetanus. Dr. Murphy did a lumbar puncture and withdrew 16 cc. of cerebrospinal fluid and injected 3 cc. of the following fluid: One and a half grains of eucaine B, one third of a grain of morphine sulphate, three grains of sodium chloride, with water to three and a half ounces. Three cc. of this would contain approximately one one-hundredth of a grain of morphine and one twenty-second of a grain of eucaine B. The boy slept for four hours immediately after the injection and in the night one and a half hours. The patient recovered.

Dr. Russell concludes as follows: 1. Strychnine convulsions only occur when the spinal cord receives afferent impressions. If these be cut off by section of the posterior roots, the spasms do not appear. Spinal cocainization or eucainization causes a temporary physiological "section" of the posterior roots and experimentally in animals controls the strychnine convulsions. Its trial in cases of strychnine poisoning in man is, therefore, strongly indicated. 2. The spasms of tetanus are very similar to those produced by strychnine and are also markedly increased by afferent impressions. One case, as noted above, has already been treated by spinal eucainization with most beneficial results, and it is important that the method should be given a wide trial.

OPERATIONS TO REDUCE SIZE OF NOSE.

J. Joseph [10] has had the experience of operating on one hundred noses of this description. He states that his results have been very satisfactory, that he has operated upon actors and actresses, and has enabled them to resume their professional work. He makes an incision at the edge of the nostril and then resects on both sides a sufficient amount of the framework of the nose to diminish its size. The skin being elastic requires only a few sutures to hold it in position, and there is no external scar visible. He always uses adrenalin and cocaine anesthesia rather than general anesthesia.

REMOVAL OF A LARGE PIN FROM THE LOWER LOBE OF THE LUNG BY TRANSPLEURAL PNEUMOTOMY.

R. Hamilton Russell [11] reports in detail an operation for the removal of a pin from the lower lobe of the lung. A portion of the left eighth rib, six inches long, was removed from the posterolateral part of the chest, and air was cautiously permitted to enter the pleura through a small puncture. The resulting collapse of the lung was not attended by untoward symptoms and the pleura was opened up to the full extent of the wound. Ample room was afforded; the fingers of the left hand were passed between the lung and the diaphragm, the lower lobe grasped near its root and gently drawn towards the opening. It was now possible to recognize the rigidity caused by the presence of the pin. Maintaining a firm hold with the left hand, the position of the head of the pin was ascertained by gently palpating the surface of the lung with the right fingers. A small incision was made in the lung over the pin's head; a sinus forceps, unopened, was pushed in until the pin was felt, and by hitching the instrument under the neck of the pin the head was easily lifted out of the wound and the pin was withdrawn. There was no hemorrhage, but it is a notable circumstance that abscess formation had already begun around the foreign body, for when the head of the pin was reached, a small quantity of pus (10 or 20 minims) escaped. No suture was put into the very small wound in the lung. The flap of integument was replaced and sutured with the exception of about two inches in the middle. This was left unclosed by sutures and a piece of oiled silk protective was laid over it before the dressings were applied; by this means free escape of air from the pleura was insured, while the piece of protective by its valvular action would impede the passage of air back into the pleura and thus encourage the expansion of the lung. Immediately after the operation there was great restlessness, which was relieved by a small dose of morphine, and for two or three days there were some dyspnea and general distress, which, however, steadily diminished. The patient recovered.

TORSION OF THE GREAT OMENTUM.

Corner and Pinches [12] have written a very interesting paper on this subject and have placed in an accessible form the information that they have obtained. As a foundation for their cases they have taken fifty-three cases which they have collected in the literature. A brief record of these cases was published in the St. Thomas's Hospital Report of 1904. The authors state: "In view of the mistakes which have been made in the fifty-three cases collected, we have thought it desirable that something should be said.

"1. The instances of abdominal torsion, unaccompanied by the presence of any hernia, form about 10% to 12% of all cases of omental torsion. . . . Five out of the six cases were diagnosed as appendicitis, with or without abscess. The sixth, occurring in Australasia, where obscure lesions are always guessed to be hydatids, was diagnosed accordingly. A tumor, or dullness with resistance, will always be present, and if

[8] The Lancet, Sept. 23, 1905, p. 887.
[9] A Case of Tetanus Successfully Treated by Aspiration of Cerebro-Spinal Fluid and Injection of Morphine, Eucaine and Salt Solution. Journal of the American Medical Association, Aug. 13, 1904.
[10] Weiteres über Nasenverkleinerung. Munchener med. Wochenschrift, lii, No. 31, Aug. 1, 1905.
[11] The Lancet, Sept. 9, 1905, p. 746.
[12] American Journal of the Medical Sciences, August, 1905, p. 314.

found before the attack has commenced, will raise other suspicions than those of appendicitis. . . .

"2. When the torsion is in a hernial sac, 10% to 12%, it will be found amongst the painful and irreducible, the incarcerated and strangulated herniæ. Here, as in the abdominal class, the surgeon should pay more attention to the recognition of the condition at operation than to the differentiation beforehand. . . .

"3. In the third division, which includes 75% to 80% of the cases, both the abdominal conditions and a hernial sac are present. The conjunction of these two enables us to take the differentiation farther than in the other classes; indeed, sufficiently far for a diagnosis rather than a conjecture to be made. . . . Typically, there will be present a tumor in the abdomen and an inguinal hernia, on the same side and of considerable duration (ten years), which will present signs of strangulation or irreducibility with pain. . . . General symptoms of subacute peritonitis or intestinal obstruction will accompany these local signs. Such things as a local tuberculous peritonitis, an intraperitoneal abscess, pelvic cellulitis or a subperitoneal lipoma might give rise to a somewhat similar state of affairs. But it is of interest to note that the majority of the diagnoses made concerned the hernial condition, *e. g.*, strangulated epiplocele, and when the abdominal signs predominated, appendicitis was suspected. . . . Rectal examinations have never revealed anything in these cases and therefore will give very useful help in differentiation, *e.g.*, appendix abscess or pelvic cellulitis.

"Strangulated inguinal herniæ are very infrequent in women, yet a relatively high percentage of cases of omental torsion, connected with a hernia, occurred in women. In middle-aged women one must always remember that the Fallopian tubes and ovaries, usually in an abnormal condition, are found in these herniæ. Omental torsion has never been found in a femoral hernia. . . . In a certain number of cases the hernia has been reduced without relief of the symptoms, although the sac is empty."

COLOHEPATOPEXY OR COLON SUBSTITUTION.

E. Wyllys Andrews [13] of Chicago has devised this new operation for perigastric adhesions after gallstone operations. He states that all post-operative adhesions after gallstone operations do not cause trouble, but that in some cases there are disturbances of great variety, ranging from slight dragging to severe pyloric compression, torsion of the pars pylorica, hour-glass stomach, dilatation, vomiting and evidence of outside pressure on the liver ducts, even to the extent of causing jaundice and hepatic colic. There may even be symptoms simulating recurrence of gallstones.

Dr. Andrews has but little faith in the Cargile membrane or aristol to prevent the formation of adhesions. He considers that it is peculiarly difficult to prevent adhesions reforming after breaking up adhesions between the liver, colon, stomach and pylorus. He has practised an operation which consists of the "substitution of the colon for the stomach after the latter has been dissected from the liver, and might be called colohepatopexy or colon substitution. I employ sutures to maintain it in this new and false, though harmless, position. As this technic has been evolved from several tentative efforts, and has worked admirably in curing the stomach distress, I feel like advising it in all similar cases."

He makes the most careful separation of the liver from the stomach, and if necessary, the liver tissue rather than the stomach wall is cut and lacerated in the dissection. Bleeding can be checked by hot sponges in the usual way if ligatures are not applicable. The pylorus should be examined by invaginating between thumb and forefinger, to demonstrate that gastro-enterostomy or pyloroplasty is not needed. Dr. Andrews continues: "It will be found that the separated viscera will fall back into intimate contact, and that there is no safe way of drawing the stomach to the left and anchoring it. The transverse colon is, therefore, pulled up with any loose omentum which is present, and thrust into the space between liver and pylorus. This is not so much of a displacement as might be supposed from a written description. The bowel is not rotated and does not cross over the stomach, but only forces it toward the right. It is practically the same position which the hepatic flexure assumes after gall-tract adhesions in average cases. To hold the colon in this new relation, its omenta are stitched to the gastrohepatic ligament, liver surface or such adhesions as form the angle between pylorus and liver. With ordinary care, tissue can be found to sew to without endangering the ducts or large vessels of the liver or of the bowel wall. The more loose omentum can be interposed the better. Of course, a colon suspension incidentally is done here, which cures at the same time any prolapse of the stomach which may be present."

MALPOSITION OF THE APPENDIX AS A CAUSE OF FUNCTIONAL DISTURBANCES OF THE INTESTINE.

Joseph A. Blake [14] has operated upon a number of cases that were supposed to be appendicitis which were relieved of their symptoms and yet no inflammatory condition of the appendix was found. He states that in most of the cases traction was exerted on the cecum through the appendix by a short meso-appendix; in a few the cecum seemed to be suspended by the appendix being adherent behind the colon. He thinks that with such a mechanical relation of these structures, it would seem that the symptoms complained of by these patients could be caused in the following ways, namely, by the tugging on the appendix and meso-appendix produced by an over-distended or overloaded cecum; by a partial obstruction produced either in the ileum or the colon by their bending over the fixed

[13] Journal of the American Medical Association, Sept. 16, 1905, p. 819.

[14] Annals of Surgery, September, 1905, p. 394.

appendix; or possibly by interference with the circulation of the cecum and ascending colon. Dr. Blake states: "When we analyze the symptoms, we see that they are an evidence of functional disturbances rather than inflammatory conditions. Fever and marked tenderness are absent. The pain is more a sense of discomfort, and lacks the violent colicky character accompanying inflammation of the appendix. The exacerbations of the pain are generally accompanied by constipation or evidences of intestinal fermentation, such as diarrhea or flatus. The discomfort between the exacerbations is more or less continuous. Purgation in nearly all instances was followed by at least temporary relief.

"With this evidence, it would seem fair to ascribe the symptoms exhibited by these patients to the relation of the appendix and its mesentery to the cecum rather than to an inflammation of the appendix itself, even if the latter condition were found."

(To be continued.)

Reports of Societies.

AMERICAN PUBLIC HEALTH ASSOCIATION.

PROCEEDINGS OF THE THIRTY-THIRD ANNUAL MEETING, HELD IN BOSTON, MASS., SEPT. 25, 26, 27, 28 AND 29, 1905.

(Concluded from No. 18, p. 501.)

THE DISSEMINATION OF TUBERCULOSIS AS AFFECTED BY RAILWAY TRAVEL.

DR. CHARLES B. DUDLEY, Altoona, Pa., stated that during the past few years, the railroads have been called quite sharply to account, for their remissness in sanitary matters, and it has seemed advisable to put a little study on the subject, with the idea in mind, of finding out exactly how far this criticism is justified. In order to concentrate the study upon something definite, the spread of tuberculosis is chosen as the field. It is obvious that if the spread of tuberculosis is largely due to contact of the healthy with those who are affected, the railroads under present conditions can hardly be held responsible, since there is no means by which ticket agents or conductors can be sure as to diagnosis, and to refuse transportation on an erroneous diagnosis would lead to serious trouble. If on the other hand, the spread of tuberculosis is largely due to pulverized, dried sputum, the railroads may fairly be regarded as responsible, and be required to take greater precautions. Careful studies seem to indicate that the dangers of infection from dried sputum on cars have been greatly magnified. As items pointing in this direction may be mentioned: *First*, the length of time of passengers on cars is small at the longest, while prolonged exposure seems to be agreed upon as a marked characteristic in the acquisition of this disease; *second*, tuberculous sputum is extremely difficult to dry; *third*, even though artificially dried, it is extremely difficult to pulverize; *fourth*, although artificially dried and pulverized, it is heavy, and does not readily remain suspended in the air; and, *fifth*, cars from their construction, afford very great advantages to the access of sunlight and air, which are more or less fatal to this form of disease germ. Furthermore, if cars are such a menace as has been supposed, it would seem that employes of the sleeping car companies and of the railroad companies, whose occupation requires that they spend much time on the cars, would be largely affected. The statistics gathered at the last census, as reported by Dr. George M. Sternberg in his book, "Infection and Immunity," show that railroad men are less affected by tuberculosis than the average of persons of the whole country. Furthermore, information from the Pullman Company does not show that the colored porters who are supposed to be predisposed to tuberculosis, and who spend a large portion of their lives on sleeping cars, are more affected than others. Also the records of the Pennsylvania Railroad, in connection with its Relief Department, show that passenger conductors and brakemen are not as frequently affected with tuberculosis as are the freight conductors and brakemen. Again bacteriological examinations of the air from cars known to have transported tuberculous patients, the results of which have been recently published by Dr. J. J. Kinyoun, do not indicate any alarming prevalence of tubercle bacilli in these cars. Finally, experiments made for the purpose, as to the behavior of tuberculous sputum on carpets and plush, show that analogous material is less likely to become dry and to be pulverized and disseminated in the air, than if this material is on a hard, non-absorbent surface.

A FEW POINTS IN REGARD TO CAR SANITATION.

DR. HENRY M. BRACKEN, Minneapolis, Minn., said that to advance car sanitation it is not only necessary to improve the methods of car construction, but to instruct railway employes in the proper care of cars. Special duties should be imposed upon them as to ventilation, car cleanliness, etc. Their instructors should be medical men connected with railway companies and familiar with sanitary problems.

He pointed out the dangers from spitting upon the floors or furnishings of cars. He discussed car cleaning, and said more attention should be given to this subject. The drinking water for railway cars should be of unquestionable quality, distilled or equally pure, and should be kept out of reach of passengers except as drawn from the faucet, should be stored in well-cleaned cans or coils, and iced with well-selected ice that has been handled in a cleanly manner. He advocated improvement in the toilet rooms of the day coaches.

THE RESTRICTION OF CONTAGIOUS DISEASES IN CITIES.

DR. CHAS. V. CHAPIN, Superintendent of Public Health, Providence, R. I., said that modern municipal sanitary practice was at first based on the filth theory of disease. During the last twenty-five years it has been largely determined by the recognition of the contagiousness of the infectious diseases. Future practice will be modified by specific knowledge as to the etiology of each disease.

The chief sanitary discovery of recent years is that unrecognized foci of infection are the principal factor in the spread of contagious disease. This is bound to modify present methods, rendering them less burdensome. Stringent measures cannot stamp out disease. All that can be hoped for is to limit extension from the recognized cases. This can be done substantially as well by moderate means.

No restriction of personal liberty is advisable in influenza, pneumonia, typhoid fever, or cerebrospinal meningitis.

In measles and whooping cough there should be some restriction of school attendance and the occasional closure of school.

In scarlet fever and diphtheria the patient should be isolated for three or four weeks, other children in the family kept from school. Wage earners should

rarely be interfered with. The use of cultures to terminate isolation in diphtheria as ordinarily practiced is illogical. Hospital facilities are needed only for the poor. Official disinfection does more harm than good.

When the above diseases appear for the first time in small places, or rather when rarer diseases appear in large cities, the most energetic measures are called for.

MODIFICATION OF PRESENT PORT INSPECTION.

DR. A. H. DOTY, Health Officer, New York, pointed out the necessity for a change in the present method of quarantine inspection, which will insure a more thorough examination of passengers and crews on incoming vessels.

A closer observation for the detection of mild or ambulant cases and recognition that this type of disease is commonly the cause of outbreaks, the origin of which are unknown, and which are frequently improperly attributed to infection by cargoes, clothing, etc.

That while five days may be regarded as the maximum period of incubation of yellow fever, the fact that a person has been five days away from an infected area should not permit him to pass quarantine without having his temperature taken and the use of other means to detect the presence of mild cases. This should also be applied to the examination of those held to complete the period of incubation of other diseases. Furthermore the possibility of occasional cases having a longer period of incubation than that generally accepted must be remembered.

Consideration of the detention, annoyance and expense to commerce caused by unnecessary disinfection.

COMMUNICABILITY OF CEREBROSPINAL MENINGITIS AND THE MEANS OF CONTROLLING ITS SPREAD.

DRS. WM. H. PARK and CHAS. BOLDUAN, New York City, stated in a joint paper on this subject that fifteen hundred cases of cerebrospinal memingitis occurring in New York City investigated by Dr. Bolduan, revealed the fact that two hundred of them were in direct contact with other cases, and that many of these showed evidence of infection from other cases. These two hundred represented eighty-eight families. Bacteriological examinations conducted by Dr. Goodwin in the laboratory revealed that about half the cases of meningitis had abundant meningococci in the nasal cavity during the first two weeks of the disease and that the nasal cavities of five attendants were badly infected. The conclusion is drawn that the meningococci are spread by the discharges from the nose and mouth of the sick and those in immediate contact with them.

METHOD OF SECURING MORE UNIFORM INSTRUCTION AND CO-OPERATION IN HEALTH WORK.

There was a symposium on this subject. PROF. F. C. ROBINSON, Brunswick, Me., and PROF. W. T. SEDGWICK, Boston, discussed educational co-operation with the general public in public health work. PROF. H. C. ERNST, Boston, and J. G. ADAMI, Montreal, spoke of graduate and under-graduate instruction in hygiene in universities and medical colleges. Mr. W. D. FROST, Madison, discussed the teaching of hygiene in the public schools. DR. S. H. DURGIN, Boston, pointed out the present regulations and laws as to the qualifications and methods of appointment of executive and technical health officers; while DR. H. D. PEASE, Albany, emphasized the importance of sanitary conferences and schools of instruction for health officers.

LESSONS TO BE LEARNED FROM THE PRESENT OUTBREAK OF YELLOW FEVER IN LOUISIANA.

DR. JAMES CARROLL, Washington, D. C., read a paper on this subject, in which he summarized as follows:

"1. The methods now in vogue for handling and reporting cases of yellow fever in cities exposed to the importation and epidemic prevalence of yellow fever in the United States are generally lax and need to be changed.

"2. It is time to acknowledge that many cases of yellow fever cannot be diagnosed with certainty in the early stages, and the only real safeguard in the epidemic zone, during the epidemic season, is to handle all recent cases of fever, not diagnosed, as if they were yellow fever.

"3. Bilious remittent fever, occurring in the yellow-fever zone, should be regarded as yellow fever, unless it is shown by microscopical examination that the infection is one of malaria, relapsing fever, etc.

"4. Physicians who make an early diagnosis of yellow fever are often subjected unjustly to severe criticism, and as the result they naturally hesitate to commit themselves even when the diagnosis is fully justified. They should be relieved from this duty by a special diagnosis commission in every city exposed to the danger of infection. The commission should be composed of three eminent diagnosticians who should be controlled by the department of health, and whose duty it would be to examine promptly and report in writing upon every case of fever occurring during the season from May 1 to Oct. 31. Practising physicians should be required, under penalty, to report promptly to the health authorities during the season in question every case of fever coming under their observation, whether in a patient or not. The health authorities should immediately notify the members of the commission, whose duty it would be to visit the case at once and every day following until the diagnosis was made clear or the case shown to their satisfaction to be not one of yellow fever. All cases suspected of being yellow fever should be treated in a mosquito-proof ward or hospital set apart for the purpose and under the control of the diagnosis commission. Appointments of resident physicians or clinical assistants to have charge of the patients should be made only on the recommendation of the diagnosis commission. The decision of the commission in the matter of diagnosis or the removal of a patient to the hospital should be final.

"5. In exceptional cases, to be decided by the commission, certain patients might be retained in their homes, protected by mosquito nets and wire screens, awaiting a final decision. The responsibility for the proper disposition of such patients should rest upon the commission, who should be aided, when necessary, by sub-commissions appointed upon their recommendation.

"6. The members of the commission should be paid a stated fee for each visit to a patient necessary to establish the diagnosis or decide upon his removal to hospital. In this way the expense to the city would be trifling, the responsibility for diagnosis and treatment would rest upon the commission, and the occurrence of an epidemic would be impossible, if the law were rigidly enforced."

YELLOW FEVER IN MEXICO.

DR. EDUARDO LICEAGA, Mexico City, discussed this subject under the following heads: Isolation of the patients; disinfection of the home occupied by the patient; destruction of the mosquito larvæ.

Since they had instituted modern methods in the city of Mexico, yellow fever has been diminished to a

marvelous extent. He predicts that at no distant date this disease will be completely exterminated, as has been done in the Island of Cuba.

ETIOLOGY AND PREVENTION OF YELLOW FEVER.

Dr. John Guiteras, Havana, Cuba, confined his remarks to new points that have arisen in the struggle with yellow fever during the year which have been evolved by investigations. The French Commission from the Pasteur Institute, experimenting in Rio Janeiro, had produced a case of yellow fever by applying to a non-immune mosquito the eggs laid by an infected mosquito. This raised a very interesting question as to the transmissibility of yellow fever by the progeny of infected mosquitoes. The speaker thought in Havana that they had by experimentation settled this matter, that an infected mosquito could not transmit infection through its progeny or eggs. He was inclined to believe from a perusal of the experiments of the French Commission that there was some mistake. Marchoux, the French experimenter, acknowledged that he had only one such case. He worked in an infected locality, and it was possible, Dr. Guiteras thought, that the man was accidentally bitten by another infected mosquito without Marchoux knowing it.

There was another argument against the transmission of yellow fever by the progeny of infected mosquitoes. It seemed to him that it would have been impossible to have eradicated yellow fever in Havana as they had done if the theory of the French Commission of the transmission of the disease by the progeny of infected mosquitoes was true. In getting rid of yellow fever in Havana, they began to attack the epidemic in the beginning, so that it was comparatively easy to wipe out the disease in that city. This would have been impossible if the progeny of infected mosquitoes had been also infected.

Another interesting point to which Marchoux called attention was that one source of infection was to be found in young children affected with a mild form of yellow fever. Dr. Guiteras said this was not new, as Blair, Chaille and himself had pointed this out in their investigations at Key West and in Havana, and they had shown that there were many cases of mild yellow fever amongst children that were unrecognized, who became sources of infection by the mosquito. It was a study of the problem of yellow fever in young children in the yellow fever zone that led him to call attention to and insist upon the great danger of mild cases of yellow fever. He had been calling attention to this for many years, not only in cases of young children, but also in young adults, especially of the colored population who were apt to develop mild cases of the disease. These he had always considered the most dangerous transmitters of the infection.

Early Diagnosis. — Special attention was directed to the high percentage of hemoglobin found in yellow fever cases, which he said was an important differential diagnostic point between this disease, typhoid fever, malaria and influenza, three affections that are frequently confounded with yellow fever. In influenza, typhoid fever and malaria the percentage of hemoglobin is low — 70, 75, perhaps 80. In malaria and typhoid fever, on the second day of the disease, one notices a decline in the percentage of hemoglobin in the blood. On the other hand, in yellow fever the percentage of hemoglobin is high, very often 100, sometimes above 100, during the first three, four and five days of the disease, and rarely below 90. If the percentage of hemoglobin went below 90, and the case proved to be one of yellow fever, he considers that there is a complication, or the patient previously suffered from malaria.

Another point that had been of considerable aid to him during the present epidemic of yellow fever, especially in Florida, where they were confronted with the existence of an epidemic of dengue, and where the question came up as to whether or not yellow fever was present. was the diazo-reaction of Ehrlich. The diazo-reaction of Ehrlich is an important diagnostic sign in typhoid fever, but it may be present in other infectious diseases. He could say positively, however, that this was never present in uncomplicated cases of yellow fever, and on two occasions his mind was completely relieved as to the existence of yellow fever during the past summer in the South by finding the Ehrlich diazo-reaction in the urine. He was, therefore, able from his experience in Havana to exclude at once yellow fever in these two cases.

Another diagnostic point is albumin in the urine. Albumin in the urine is a characteristic sign of yellow fever. He insisted more than he had ever done before upon the importance of this symptom, and upon a certain interpretation that must be given to the presence of albumin in the urine. After a careful study of many kinds of fever in Havana, he had found that albumin in the urine was more common in other infectious diseases than he had thought. It is common in cases of influenza and of typhoid fever, but not so common in malaria. It is only occasionally found in cases of malaria. Albumin in the urine is found in cases of dengue. The special point he brought out was that the quantity of albumin found in the urine in cases of yellow fever was out of all proportion to the other symptoms present.

Dr. Guiteras concluded his remarks by referring to the methods of disinfection that are being employed in New Orleans, and complimented the physicians in charge of yellow fever cases in Louisiana on the efficient work they are doing.

He spoke of the use of superheated steam for the destruction of mosquitoes, saying that this agent is being used to great advantage in the present epidemic in Louisiana, and it is a valuable and efficient adjunct.

THE COLLECTION AND PRESERVATION OF SAMPLES OF SEWAGE FOR ANALYSIS.

Mr. Stephen de M. Gage and Mr. George O. Adams, Massachusetts, stated that in collecting samples of sewage and the effluents of sewage filters for analysis, more representative samples would be obtained if each sample is the average of a number of small samples taken at short intervals. The preservative used must prevent chemical changes. Two preservatives which best fulfill these conditions are chloroform and carbon bisulphide. Both destroy the bacteria and prevent all bacteriolytic decomposition; both are sparingly soluble in water, and being heavier than water they do not evaporate rapidly, requiring small amounts to be used in each sample. Both are comparatively inexpensive, and neither interferes with any of the usual analytical methods.

THE CAUSE, COURSE AND TREATMENT OF BERI-BERI.

Dr. Hamilton Wright, Beri-Beri Research Commissioner, London School of Tropical Medicine, referred to previous publications on this subject.

The cause of the disease appears to be a bacillus which gains entrance to the alimentary canal in contaminated food and drink, choosing for its active site the stomach and small intestine, *i. e.*, chiefly the pylorus and the duodenum.

The disease begins in necrosis of the mucosa; congestion; small-celled infiltration; seemingly an extra cellular toxin is formed which poisons the peripheral terminations of the fibers in the systems of neurons, inducing symmetrical, bilateral, sensi-motor, cardiac, and vaso-motor paralyses.

A description of the symptoms, of the micro-organisms which seem to be the cause of the disease, and the course of the disease are given, together with a working theory of the cause and nature and treatment.

Reference to preventive measures, such as care in the disposal of feces, etc., with statistics in jail beriberi before and after the adoption of such measures, are given.

METHODS OF BACTERIOLOGICAL EXAMINATION OF MILK.

DR. FRANCIS H. SLACK, Boston, Mass., described the apparatus and methods in use at the Boston Board of Health Laboratory for collecting, plating, incubating and counting; also for direct examination of milk sediments and the microscopic estimate of the number of bacteria present, together with pus and streptococci determination. The methods of examination described are recommended as a system which has been reasonably successful in practice for city laboratory work where quick reports are needed as well as the accurate examination of large numbers of samples.

CONSIDERATION OF SOME OF THE PROBLEMS AND DIFFICULTIES OF BACTERIOLOGICAL DIAGNOSIS.

MR. BERT R. RICKARDS, Boston, discussed some of the every-day problems and difficulties met with in making bacteriological diagnoses. Each disease discussed was considered, first, in relation to any special points connected with the preparation of the specimen submitted; secondly, in regard to those problems which have to do with accuracy in diagnosis; and, thirdly, with reference to results and their relation to the clinical aspect of the case.

LONGEVITY OF BACILLUS TYPHOSUS IN SURFACE WATERS AND SEWAGE.

PROF. H. L. RUSSELL and MR. C. A. FULLER, Madison, Wis., contributed a paper on this subject. From their experimental work it appears that in relatively pure waters of a surface character the typhoid bacillus is capable of retaining its vitality for about eight days. The results of their experiments confirm and extend on a broader basis the data obtained in the investigations made on the Chicago Drainage Canal. They have been carried out under sufficiently diverse conditions to warrant the belief that the typhoid organism in natural sewage does not live as long as it will in relatively pure water.

A committee consisting of DRS. JOHN GUITERAS, FREDERICK MONTIZAMBERT, P. H. BAILHACHE, JAMES CARROLL, WM. BAILEY and EDUARDO LICEAGA, presented the following preambles and resolutions:

WHEREAS, The results obtained during the present epidemic of yellow fever in New Orleans by the methods of mosquito extermination, and by the prevention of the access of the mosquito to the patients, have been far in advance of the results obtained by the older methods, and

WHEREAS, It has been possible by the new methods to hold in check and to gradually reduce an epidemic that has taken a firm foothold in the midst of the largest non-immune population that was ever exposed to yellow fever; therefore, be it

Resolved, (1) That the Association sees in these results a further confirmation of the view that yellow fever is naturally transmitted only by the bite of an infected mosquito. (2) That the Association is of opinion that an efficient plan of defense against the propagation of yellow fever at the beginning of an epidemic can be easily established upon the basis of this doctrine. (3) That the successful carrying-out of such plan depends upon a thorough understanding of the mosquito doctrine by the people, and the support that they may give to the prompt and frank reporting and to the proper handling of the first cases and of all suspicious cases. (4) The Association wishes further to congratulate the Public Health and Marine Hospital Service for the brilliant work done by Dr. Joseph H. White and his colleagues in New Orleans, and to urge upon all concerned that the said Service be called upon to take charge permanently of maritime quarantine along the Gulf coast.

These resolutions were adopted.

OFFICERS.

The following officers were elected: President, Prof. F. C. Robinson, Brunswick, Me.; First Vice-President, Dr. J. J. Kinyoun, Glenolden, Pa.; Second Vice-President, Dr. Domingo Orvananos, Mexico City, Mexico; Third Vice-President, Dr. Richard H. Lewis, Raleigh, N. C.; Secretary, Dr. Charles O. Probst, Columbus, Ohio; Treasurer, Dr. Frank W. Wright, New Haven, Conn.

Mexico City, Mexico, was chosen as the place for holding the next annual meeting, in 1906.

Recent Literature.

The Practical Medicine Series of Year Books, comprising ten volumes on the Year's Progress in Medicine and Surgery. Issued monthly. Under the general editorial charge of GUSTAVUS P. HEAD, M.D., Professor of Laryngology and Rhinology, Chicago Post-Graduate Medical School. Volume VI. General Medicine. Edited by FRANK BILLINGS, M.S., M.D., head of the Medical Department and Dean of the Faculty of Rush Medical College, Chicago, and J. H. SALISBURY, M.D., Professor of Medicine, Chicago Clinical School. Chicago: The Year Book Publishers. May, 1904.

We have previously commented upon this series of Year Books. The volume before us contains the subject of general medicine, and is taken up, as is the plan of the work, with abstracts of important articles on various subjects connected with internal medicine,

A Manual of Acute Poisoning, giving classification, varieties and individual substances, usually met with in emergency poisoning, with special symptoms, simple tests, chemical antidotes, physiologic antagonists and treatment. Together with Method for Use in First Aid to the Injured. By JOHN W. WAINWRIGHT, M.D., Member of the American and New York State Medical Association, The American Chemical Society, etc. New York: E. R. Pelton. 1905.

This small book of ninety-six pages, including an index, is devoted to a brief presentation of the subject of acute poisoning, together with certain information regarding first aid to the injured. The value of such a book lies in the fact of its condensation. It may be easily carried in the pocket, and gives the essential points of treatment, together with the symptomatology of various forms of poisoning. The book is unpretentious, but should fill satisfactorily the place for which it is designed.

Handbook of Anatomy. Being a Complete Compend of Anatomy, including the Anatomy of the Viscera and Numerous Tables. By JAMES K. YOUNG, M.D., Professor of Orthopedic Surgery, Philadelphia Polyclinic; Clinical Professor of Orthopedic Surgery, Woman's Medical College of Pennsylvania; Instructor in Orthopedic Surgery, University of Pennsylvania; Fellow of the Philadelphia Academy of Surgery; Fellow of the American Orthopedic Association; Member of the American Medical Association, etc. Second edition, revised and enlarged. Illustrated. Philadelphia: F. A. Davis Company. 1905.

A general revision has been made by the author in this second edition of his Handbook of Anatomy. Special attention has been given to the nervous system, and the plates illustrative of the distribution of the peripheral nerves are particularly to be commended. The book has been enlarged and the illustrations increased in number as a result of the experience gained through the publication of the first edition.

Atlas and Textbook of Topographic and Applied Anatomy. By PROF. DR. O. SCHULTZE, of Würzburg. Edited with additions, by GEORGE D. STEWART, M.D., Professor of Anatomy and Clinical Surgery, University and Bellevue Hospital Medical College, New York. pp. 187. Illustrated. Philadelphia and London: W. B. Saunders & Co. 1905.

Dr. George D. Stewart, of New York, has taken upon himself to edit and translate into English, with certain additions, this well-known atlas of Dr. Schultze. The book was originally written, not for the anatomist, but for the practical physician. It is, therefore, not complete, but, recognizing the somewhat unnecessary detail with which certain anatomical books are overloaded, the author has attempted in semi-diagrammatic form to bring before the reader the essential points in practical human anatomy. Carrying out his dictum, "Think anatomically if you wish to be a good physician," Professor Schultze has produced a book which cannot fail to be of the very greatest value to students of whatsoever grade of knowledge. To accomplish this end he has presented anatomical facts in the form of an atlas containing twenty-five colored illustrations and eighty-nine text cuts, sixty in colors. These are beautifully executed with explanatory text in immediate connection with the illustrations. The result is one of the most satisfactory atlases of human anatomy which has yet been published. The task of the editor has been admirably done. He has made the text to conform with English and American nomenclature, and has added occasional notes which are all indicated. Dr. W. H. Thomas has made the translation from the German text. The book is a model of its kind and, as appealing essentially to the eye and giving in realistic form essential topographical relations, it fills a place which the ordinary textbook of anatomy strives for but usually does not completely attain. An excellent plan has been adopted of overlaying the tables with a tissue paper sheet on which is printed in English the names of the various parts which on the table itself are given in Latin. We have no hesitation whatever in recommending this volume most cordially to anatomical students and to physicians generally. It is easy of reference. The plates are absolutely clear, of good size and explained in such a way that the most inexperienced may quickly find the anatomical structure of which he may be in search. The volume is excellently indexed, stoutly bound and most attractively printed.

A Manual of Diseases of the Nose and Throat. By CORNELIUS GODFREY COAKLEY, A.M., M.D., Professor of Laryngology in the University and Bellevue Hospital Medical College, New York, etc. Third edition, revised and enlarged. Illustrated with 118 engravings and 5 colored plates. New York: Lea Brothers & Co. 1905.

The first edition of this textbook was reviewed in this JOURNAL, Dec. 14, 1899, and the second edition four years ago. The present edition is identical with the second except that a short description of the submucous septal operation has been added and the chapter on the accessory sinuses has been rewritten. This chapter is excellent, but to keep the proper balance with the rest of the book it has been condensed more than the importance of the subject warrants. As a whole there is no recent manual of its size that is better than this one.

Saunders' Question Compends. Essentials of the Practice of Medicine. Prepared especially for students of medicine. By WILLIAM R. WILLIAMS, M.D., formerly instructor in Medicine and Lecturer in Hygiene, Cornell University; Tutor in Therapeutics, Columbia University (College of Physicians, and Surgeons), New York. 12mo of 461 pages. Philadelphia and London: W. B. Saunders & Co. 1905.

The title tells the story of the book. For those who desire to make use of a question compend in studying the practice of medicine this seems to be a good one. It is condensed, accurate, well arranged; the paper and printing are good.

A Manual of the Practice of Medicine. By A. A. STEVENS, A.M., M.D., Professor of Pathology in the Woman's Medical College of Pennsylvania, and Lecturer on Physical Diagnosis at the University of Pennsylvania. Seventh edition, revised. 12mo of 556 pages, illustrated. Philadelphia and London: W. B. Saunders & Co. 1905.

This is a familiar book which has kept possession of its field for quite a number of years and is now presented to the medical public in its seventh edition. It is especially a book for students, but is adapted to the wants of nurses and of those general practitioners who desire something for the bag or something more handy than the larger octavo.

THE BOSTON
Medical and Surgical Journal.

THURSDAY, NOVEMBER 9, 1905.

A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.

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HYGIENE IN ELEMENTARY SCHOOLS.

THE question of hygiene in elementary schools is evidently one of increasing importance. As our interest in the prevention of disease has grown, it has become clear that much more may be done toward this end by a more careful supervision of the schools and also by a completer recognition on the part of the teachers of the dangers of contagion. How far it is essential or desirable to instruct elementary pupils in the principles of physiology and anatomy it is not our present purpose to discuss, but that children, as soon as they are able to appreciate such matters at all, should be instructed in the simple rules of hygiene cannot be questioned. The work recently done in New York in connection with trachoma, which has also been adopted in other cities, and the general supervision which the medical profession, through its boards of health, keeps over the physical welfare of children in the schools, are accomplishing much toward the amelioration of many unfortunate conditions heretofore existing. Much, however, remains to be done, and the more systematically the whole subject is discussed the more likely are results of importance to be attained.

Among the papers read in connection with the recent convention of the Society for the Prevention of Tuberculosis was a report on the Present Conditions and Prospects of Education in Hygiene in the Schools of the United Kingdom. The report was presented by Dr. G. A. Herron of London who succinctly described the situation regarding the teaching of hygiene in England, Scotland, Wales and Ireland. Throughout the United Kingdom teachers in those schools which are supported by the rates are required to undergo a course of special instruction. As an optional subject in this course a slight amount of hygiene is taught. In England and Wales the regulations for the training of teachers include a certain study of the constitution and operation of the healthy mind and body with application of such knowledge to the work of the teacher. In addition some knowledge is expected of signs of illness and defect and methods of dealing with them in the school. As an optional subject, what is known as "housecraft" is taught female teachers. Under this somewhat comprehensive heading is included instruction in the chief needs of the body for the maintenance of health, the hygiene of clothing, the hygiene of physical exercise, certain matters connected with food preparation and the nutrient value of food and finally the elements of house management. Even this instruction is not given to men who propose to become teachers. In certain schools the instruction in hygiene is given by the ordinary teachers. The Board of Education has recommended a certain degree of instruction in cleanliness, the uses of sunshine, eating and drinking, the same being given with more detail to the older pupils, while still older children receive instruction concerning tobacco, accidents and illness, cuts, abscesses, burns and even fits and hemorrhages, and also are taught when to send for a doctor. In spite of the range of instruction insufficient attention is given to the infectious diseases, and especially tuberculosis. In Scotland the situation is somewhat similar, but particular attention is given to the recognition of physical defects among school children which take them out of the ordinary category of intelligence. In some of the schools actual clinical exercises are given by the lecturers, as, for example, the demonstration of the presence of adenoids and certain obvious defects in the physical condition of the pupils. In Ireland the leading principles of hygiene are impressed on the pupils in all the schools and certain definite measures are taken to prevent the spread of disease.

Resolutions were adopted in connection with this report, which, in general, were as follows: that every effort should be made to insure the teaching of hygiene in schools and in universities; and that in every country represented in the association a delegate be appointed to promote the cause of education in hygiene with special reference to the prevention of infectious diseases and particularly tuberculosis.

The foregoing movement should have the hearty approval of all who are interested in the

welfare of children primarily, and secondarily in the welfare of the community at large. That hygiene may be taught with advantage in the schools is unquestioned. Mistakes have no doubt often been made; judgment has frequently been at fault; details have been insisted upon where principles are required, and the whole subject, while passing through the experimental stage, has suffered at the hands of theorizers and incompetent teachers. We have no question that hygiene in its broad aspects should be taught in the schools, even to the younger children. If it be taught, it should be done by thoroughly equipped teachers and made a distinct and important part of the school curriculum. The action taken by the International Congress of Tuberculosis will certainly tend toward a systematization of the work in this line in various countries, and experience should in time correct the errors which are sure to arise in the teaching of such a subject to children and young adults. It is as unfortunate to teach too much as too little. The golden mean must in some way be found.

HOSPITAL INTERNES FOR THE PANAMA CANAL.

It is again announced that an examination for the position of hospital interne under the Isthmian Canal Commission for service on the Isthmus of Panama will be held Nov. 29 and 30. As in some other departments of the government service, an insufficient number of eligible candidates applied for the previous examination on January 18, it is, therefore, particularly desired that qualified persons make application at this time. The candidates must be between the ages of twenty and thirty, graduates of reputable medical schools having not less than a three years' course. The salary of the position is one hundred dollars a month with room, but without board and washing. The examination will occupy two days and will include seven general subjects, among which letter writing is included. The greatest importance in this examination is attached to general pathology and the practice of medicine, and surgery and surgical pathology is given second place. Applicants may apply to the United States Civil Service Commission at Washington.

It is a matter of interest and allows room for speculation that, while such positions are not greatly sought by medical students about to enter upon the serious work of their profession, it is not to be doubted that there are sufficient young men to fill all these positions and still leave enough to carry on the necessary practice of medicine at home; yet experience shows that many men prefer to wait for a practice which is often slow in coming, or even give up the profession entirely, rather than seek knowledge and experience under conditions which the government offers. An analysis of the situation would lead us too far, but it is apparent that the slight spirit of adventure which a residence in Panama, for example, would entail is not a part of the ordinary man's mental equipment. This is to be regretted, although perhaps it is not a matter of surprise. Unquestionably, much more might be accomplished in medicine under existing conditions if young men without close attachments at home would be willing at the risk of a certain amount of personal inconvenience to enter upon medical work in distant places. The opportunity for development is certainly greater under these conditions, and the possibility of accomplishing original work of value is correspondingly increased. Undoubtedly, residence at the Canal Zone implies a certain danger, both from the change in climate and also because of infectious disease to which one is likely to be exposed. Malaria, for example, is no doubt a definite menace to persons coming from the north and must be met and overcome by the knowledge and means now at our disposal. Evidence is at hand which shows that the natives of Panama have acquired an immunity to malaria and that aliens may be fatally infected from natives who are apparently healthy. This is an important consideration, and must naturally be taken into account by physicians seeking employment in the Canal Zone. This, however, should not stand in the way of a generous response to the government's offer, and we have no doubt that, slow as the process may be, ultimately a sufficient number of suitable men will be secured to carry on and develop the work which is now beginning.

THE INTERURBAN CLINICAL CLUB.

Before Professor Osler left this country he organized a clinical club made up of six members from each of the four large eastern cities, Boston, New York, Philadelphia, Baltimore. The membership, therefore, is twenty-four, and this limitation of numbers is regarded as one of the chief advantages of the association. The design of the club is to make systematic visits to various clinics with which the members of the society are connected in order that new ideas may be

absorbed and the medical cultivation of the members be broadened. We understand that Dr. Osler hoped that other groups of cities might adopt a similar plan. The coming meeting, to be held early this month in New York, comprises demonstrations at various New York medical schools and hospitals with a comparison of methods. The clinical aspect of the subjects discussed is evidently kept in the foreground. The program certainly gives promise of an interesting exchange of opinions.

This organization, which is now about to hold its second meeting, is very similar in design and scope to the American Society of Clinical Surgery, which also has a small membership and plans to demonstrate the methods in use in the various cities in which the members practise. The interchange of ideas which such small clubs bring about is evidently of value. The tendency to be satisfied with one's own methods, whether in teaching or in practice, is on all occasions to be discouraged. We can, therefore, see no reason why, if the enthusiasm be kept alive, such societies should not be useful and tend to the wide dissemination of the best medical knowledge. The necessity of a small membership is an obvious drawback, but unfortunately a larger membership would defeat the main object for which the clubs exist, namely, an intimate, personal interchange of ideas.

MEDICAL NOTES.

CARTWRIGHT LECTURES. — The Cartwright lectures on the general subject of surgery will be delivered in Columbia University the early part of next year by Baron Takaki of Tokio.

PREVENTION OF SMALLPOX IN MONTANA. — The Montana State Board of Health has recently issued a small pamphlet discussing smallpox, its prevention, restriction and suppression. The circular is intended to reach every family throughout the state, and is designed to spread the knowledge of means of preventing smallpox and of indicating the signs of its appearance. To accomplish this end the pamphlet is well illustrated with smallpox patients in varying stages of the disease. The mortality of the disease and the great expense it entails when appearing in epidemic form are discussed, together with its history and a persistent appeal for vaccination and how and when vaccination should be performed.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, Nov. 8, 1905, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 36, scarlatina 32, typhoid fever 11, measles 102, tuberculosis 34, smallpox 0.

The death-rate of the reported deaths for the week ending Nov. 8, 1905, was 15.86.

BOSTON MORTALITY STATISTICS. — The total number of deaths reported to the Board of Health for the week ending Saturday, Nov. 4, 1905, was 190, against 176 the corresponding week of last year, showing an increase of 14 deaths, and making the death-rate for the week 15.77. Of this number 96 were males and 94 were females; 187 were white and 3 colored; 117 were born in the United States, 70 in foreign countries, and 3 unknown; 32 were of American parentage, 143 of foreign parentage, and 15 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 35 cases and no deaths; scarlatina, 33 cases and no deaths; typhoid fever, 12 cases and 3 deaths; measles, 73 cases and 1 death; tuberculosis, 40 cases and 22 deaths; smallpox, no cases and no deaths. The deaths from pneumonia were 21, whooping cough 0, heart disease 22, bronchitis 5, and marasmus 11. There were 12 deaths from violent causes. The number of children who died under one year was 40; the number under five years, 53. The number of persons who died over sixty years of age was 44. The deaths in public institutions were 54.

One case and one death from cerebrospinal meningitis.

THE HOUSE OF THE GOOD SAMARITAN. — On Wednesday afternoon, Nov. 1, this admirable charitable institution, which has been in existence now for forty-five years, opened its new hospital buildings for the inspection of visitors. The chapel was consecrated by the Bishop of Massachusetts, and there was a reception in the afternoon by members of the association. The new building is situated next to the grounds of the new Harvard Medical School buildings, and is extremely well adapted in all respects to its purposes. A very excellent feature of its construction is the solarium and the piazza galleries to which there is easy accessibility for beds from the wards.

MEETING OF THE MASSACHUSETTS ASSOCIATION OF BOARDS OF HEALTH. — At the recent quarterly meeting of this association, Dr. G. B. Magrath,

Assistant Secretary of the State Board of Health, read a paper attributing the recent epidemic of typhoid fever in Springfield to fruit venders. Several who discussed the paper did not accept Dr. Magrath's conclusions. It cannot, however, be questioned that the matter to which he has drawn attention is one of importance. Dr. Langdon Frothingham read a paper on rabies, and Mrs. Ellen H. Richards, of the Massachusetts Institute of Technology, reported on the last meeting of the American Public Health Association.

NEW YORK.

Bequests. — By the will of the late Henry H. Cook of New York, over $90,000 is left in charitable bequests, and among these is one of $20,000 to the Presbyterian Hospital.

Annual Budget for 1906. — The annual budget of the city for 1906 was made public on Oct. 31. The Department of Health is to receive $1,344,396, as against $1,259,391 in 1905; the Department of Public Charities, $2,048,740, as against $1,977,490 in 1905; the Tenement House Department, $618,433, as against $516,433 in 1905; Bellevue and Allied Hospitals, $648,480, as against $614,800 in 1905; and Charitable Institutions aided by municipal appropriations, $3,456,056, as against $3,098,356 in 1905.

Examination of Saloon and Second-Cabin Passengers. — On Nov. 1 an order issued by the Commissioner of Immigration of the port of New York went into effect that saloon and second-cabin passengers arriving from abroad must be examined by government physicians in the same way as steerage passengers. The commissioner was led to take this course by the recent arrival, as a saloon passenger, of a man who had previously arrived in the steerage of a steamer of the French line, and had been deported on account of physical disabilities.

Addition to St. Vincent's Hospital. — A seven-story addition to St. Vincent's Hospital, at 11th Street and 7th Avenue, was opened with public ceremonies on Nov. 1. Archbishop Farley presided, and among the speakers was Dr. Frederic S. Dennis, of the Surgical Staff, who said that St. Vincent's had treated 22,695 patients during the past year. The new addition increases by one hundred beds the capacity of the hospital, which now has a total of 425 beds. The operating room was furnished by Dr. Dennis. "Adrian Iselin Hall" was erected and furnished by the late Adrian Iselin, and an x-ray room was furnished by John D. Crimmins. A number of wards were furnished throughout by individual donations, and among the other contributors to the new building were Mrs. John W. Mackay, Mrs. Morgan Hildreth and Mrs. Joseph J. O'Donohue, each of whom gave $5,000 for the endowment of beds in memory of deceased relatives.

Proposed Sanatorium for Incipient Tuberculosis. — On Oct. 24, President Darlington of the Health Department and Dr. H. M. Biggs, medical officer of the Department, accompanied by a large number of physicians and by delegations from the National Association for the Study and Prevention of Tuberculosis and the Association for Improving the Condition of the Poor of New York, visited the site of the proposed sanatorium for incipient tuberculosis of the Health Department, near Otisville, Orange County. The party went by special train to Otisville, and from there drove to Shawangunk Mountain, where the sanatorium is to be located. Dr. Biggs expressed the opinion that it was fortunate that the supervisors of the towns in which were situated the locations previously selected had refused their consent, as he was convinced that this final selection of Shawangunk Mountain was the best that could possibly have been made. Standing on the top of the mountain, he explained that it was purposed to have the patients camp there in the summer season, and in winter on the plateau below, where they would be sheltered from the winds, but have the full benefit of abundant sunlight. The stone fences and a number of farm houses on the property will be utilized for the foundations of the hospital buildings, while the farms purchased will yield a plentiful supply of milk, eggs, vegetables and fruit.

Death-Rate for October. — The reports of the Health Department show a low death-rate for the month of October. The same was true as regards October, 1904, and the death-rate for the month in the two years is almost exactly the same. The mortality this year represents an annual death-rate of 15.90, as against 16.61 in September and 15.81 in October, 1904. The corrected death-rate, excluding non-residents and infants under one week old, is 14.97. Among the diseases which showed a diminished fatality were the following: The weekly average of deaths from whooping-cough declined from 7.25 in September, to 4.75 in October; the weekly average from epidemic cerebrospinal meningitis, from 11 to 9; from typhoid fever, from 21 to 17.5; from diarrheal diseases, from 179.75 to 114.75;

and from diarrheals under two years of age, from 160 to 105.75. Among the diseases which showed an augmented mortality were the following: The weekly average of deaths from croup and diphtheria increased from 18.25 to 23.5; from scarlet fever, from 3 to 4.5; from pneumonia, from 50 to 75.75; from bronchopneumonia, from 41 to 52.5; from acute bronchitis, from 15.5 to 19.25; and from organic heart diseases, from 82.25 to 91.5.

Obituary.

JAMES READ CHADWICK, M.D.

THE following memorial to Dr. James Read Chadwick was presented by Dr. Clarence J. Blake at the semi-annual meeting of the Suffolk District Medical Society, Oct. 28, 1905.

The remark of Dr. Holmes, "You young men do not know how much you owe to men like your father and myself, because we stand between you and the door, and when we have passed it you will find yourselves nearer to it than you now think," comes forcibly to mind as we, the elders, in our turn stand near that narrow door through which each must pass singly to the judgment of that final court, the court of the extenuating circumstance, and watch the departure of our fellows.

Two of our members whose interests and activities extended beyond the bounds of this society have gone from us within the past few months, Edward S. Wood and James Read Chadwick, and it is of the latter, once a Secretary of the Society that I am accorded the honor of speaking.

Born in November, 1844, he entered the academic department of Harvard at seventeen years of age, graduating with his class in 1865, and later entering the Harvard Medical School where he took his degree in 1871, and then went abroad for the study of what was then a comparatively new departure in medicine, the specialization of the diseases of women.

Returning to Boston he was made an instructor in gynecology in the Harvard Medical School, in 1873, and held that position for seven years, when he retired, but was again appointed in 1883 and served until 1887. During a part of his teaching term he was physician to out-patients in the Gynecological Department of the Boston City Hospital and also carried on a charity clinic of his own creation.

He was secretary of the American Gynecological Society from 1876 to 1882 inclusive, and president in 1897. He was president of the Harvard Medical Alumni Association, to the establishment of which he greatly contributed, from 1890 to 1893 inclusive, on which latter date he became a vice-president of the Harvard Graduates Magazine Association, and so remained.

As president of the Massachusetts Cremation Society since 1894, he has given to the purposes of that organization, in which he heartily and thoroughly believed, the service of his time, his thought, his pen and his ability as an organizer, but the post which best illustrates his tenacity of purpose is that which he had held as librarian of the Boston Medical Library since 1875.

He was a corresponding fellow of the London Obstetrical Society from 1876 to 1900, when he became an honorary fellow, an honorary member of the Detroit Academy of Medicine since 1876 and an honorary member of the Medical and Chirurgical Faculty of Maryland since 1896. As a member of the Massachusetts Medical Society his interest in his work was broad though mainly centered in this branch, the Suffolk District, of which he was secretary and anniversary chairman of the society as a whole, in 1889. He was a member of the Association of Medical Librarians and became its president in 1903.

Of the more than seventy papers credited to him in the bibliographical index of the library forty-five are upon subjects relating to his special line of professional work, beginning in 1872 and ending in 1897.

There are six distinct papers and addresses on the subject of medical libraries, the first in 1876, and three on the subject of medical education of women, the first in 1873, setting forth an interestingly clear point of view which he continued to hold.

The remaining papers cover a wide range of subjects important to the medical profession at large and to considerations of public health, and these recorded instances by no means include the whole tale of his professional contributions. A fluent and ready speaker, warm with his chosen subject, he was fecund of extemporaneous discussions and addresses which found no separate printed record, while the Transactions of the American Gynecological Society, the Association of Medical Libraries, the Harvard Medical School Alumni Association and the Massachusetts Cremation Society bear witness, in their more studied productions, to his capacity for literary labor and the wide range of his interest, for Dr. Chadwick, was, emphatically, a worker along individual lines and his keen appreciation of the joy of activity made his work a pleasurable pursuit of achievement.

Resolved, That in the death of James Read Chadwick there was lost to this society a valuable member, to the medical community a benefactor and to the public welfare an earnest friend.

Miscellany.

SEVERE INJURY TO SPINAL CORD WITH PARTIAL RECOVERY.

AT the last meeting of the American Neurological Association, Dr. Guy Hinsdale of Hot Springs, Va., reported the outcome of a case in which many Boston physicians were directly or indirectly interested. The case was of a young

woman who was the victim of an explosion at Manchester, Mass., which resulted in a fracture of the first, second and third dorsal vertebræ with seven other fractures in other parts of the body. The spinal cord was seriously injured, but operation was attempted for the relief of certain symptoms. Dr. Hinsdale describes in detail the subsequent history of this case in the *Journal of Nervous and Mental Disease* for September. The patient ultimately recovered to the extent of being able to walk with assistance, a remarkable outcome in view of the extraordinary severity of the original injuries. Dr. Hinsdale pays the following tribute to his patient: "The lessons which the case has taught are not altogether of a scientific character, interesting as these are; there has been a remarkable exhibition of fortitude under the most desperate situations: patience, courage, hope, determination,— in short, the ideal attitude that shows strength of character when it is most needed."

Correspondence.

REPORT OF COMMITTEE ON NOMENCLATURE. NATIONAL ASSOCIATION FOR STUDY AND PREVENTION OF TUBERCULOSIS.

Boston, Mass., Oct. 31, 1905.

Mr. Editor: In your editions of Oct. 19 and 26, appears the report of the Committee on Nomenclature as given to and accepted for a year's trial by the National Association for the Study and Prevention of Tuberculosis, at Washington, last May. Through some inadvertence, the plan suggested by the committee for the tabulation of cases of pulmonary tuberculosis was omitted. Will you, therefore, allow me a few words of explanation to your readers who otherwise might not understand the method suggested by the committee?

In the number of the Journal of Oct. 26, page 478, after that portion entitled "Exhibit A," the following diagram should have appeared. In conjunction, the two represent the method proposed for tabulating cases in accordance with Turban's scheme in Europe, with the additions suggested by the American committee and meant especially for means of comparison among the various sanatoria in the United States. The scheme can also be used with very slight modifications in private practice.

The committee was composed of Dr. Lawrason Brown, of Saranac Lake, Dr. Herbert M. King, of Liberty, N. Y., Dr. W. H. Bergtold, of Denver, Dr. J. H. Pryor, formerly of Ray Brook, N. Y., Dr. George W. Norris, of Philadelphia, and myself, appointed by the President of the Association, Dr. E. L. Trudeau, with whom the committee were in consultation during the preparation of the report. They are fully aware of the great difficulty of presenting any scheme which shall satisfy everyone. The plan presented by them was made after many hours of careful thought and by concessions on the part of all. The Association voted to accept the report of the committee for trial during the coming year, and to have the scheme published in the leading medical journals in America as well as in the Transactions of the Association soon to appear.

The committee is especially desirous of receiving suggestions or criticisms for consideration before making their next report in May, 1906.

Respectfully yours,

Vincent Y. Bowditch,
Chairman of the Committee on Nomenclature.

Plan suggested by the Committee on Nomenclature for Tabulation of Cases following Turban's Scheme.
(*Vide* Boston Medical and Surgical Journal, Oct. 26, 1905, p. 478.)

Name.		Condition	Amount of Involvement.	Duration of Disease	General Condition	Digestion	Range of Pulse	Max. Temp. for day.	T. B.*	Complications	
										Non-tub.	Tub.
Mr. X.	On Admission	Advanced	II	3 mos.	Favorable	Impaired	76–100	100.°	+	Neg.	Neg.
	At Discharge	Arrested	II	9 mos.	Favorable	Unimpaired	76	98.6°	0		

* Absence or presence of tubercle bacilli to be determined only after repeated examinations while patient is under observation.

INTERNATIONAL MEDICAL CONGRESS.

75 W. 55th St., New York.

Mr. Editor: The committee in charge of the International Medical Congress, which will be held in Lisbon from April 19 to 26, 1906, has written asking for the contribution of papers on the following medico-legal subjects, and saying that as yet no titles of communications touching on any of these subjects have been received from this country:

The signs of virginity and of defloration in medico-legal relations.

Hand marks and finger prints; their medico-legal importance.

The medico-legal importance of the caruncule myrtiformes.

The mechanism of death by hanging.

The value of bacteriologic examination of vulvo-vaginal discharges in the determination of venereal contagion.

The signs of death by drowning.

Ecchymoses in legal medicine.

Spontaneous and criminal abortions from a medico-legal point of view.

Medico-legal investigation of blood stains.

The relations between the seat of cerebral contusions and the point of application of the agent which produced them.

Epilepsy in legal medicine.

The induction of abortion; when is it permissible?

The value of legal medicine in the study of criminal law.

The best legislation for the protection of the "medical secret" (the obligation imposed upon physicians to treat as inviolable all information concerning patients obtained while in the discharge of their professional duties).

The effects of the civil and penal law towards the newborn living infant.

Distinction between the natural openings in the hymen and tears of this membrane.

Criminal vulvar copulation.

Organization of medico-legal services.

If any of the readers of this communication intend to take part in the discussions of this section of the congress, or to prepare papers for it on any of the subjects mentioned, or on any other subject in medicine or surgery, he should inform the Secretary of the American Committee.

Very truly yours,

Ramon Guiteras,
Secretary, American National Committee.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, OCT. 28, 1905.

CITIES.	Population.*	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diphtheria and croup.	Typhoid Fever.	Cerebro-spinal Meningitis.
New York	3,808,644	1,138	334	26.00	12.82	1.49	1.67	.44
Chicago	1,990,750	470	128	28.06	11.28	3.40	1.70	—
Philadelphia	1,407,968	410	108	26.10	8.05	3.90	1.22	—
St. Louis	633,606	—	—	—	—	—	—	—
Baltimore	542,229	195	44	26.15	7.18	1.02	3.59	—
Cleveland	444,251	—	—	—	—	—	—	—
Buffalo	400,645	—	—	—	—	—	—	—
Pittsburg	362,463	113	40	19.46	11.50	4.42	5.30	—
Cincinnati	338,377	—	—	—	—	—	—	—
Milwaukee	325,990	—	—	—	—	—	—	—
Washington	300,776	—	—	—	—	—	—	—
Providence	196,744	60	15	31.67	5.00	3.33	3.33	1.67
Boston	593,598	182	64	15.93	9.89	.55	2.19	—
Worcester	127,963	28	13	21.43	3.57	—	3.57	—
Fall River	105,697	23	12	39.13	8.70	—	—	—
Cambridge	97,426	20	8	25.00	5.00	—	5.00	—
Lowell	94,845	30	10	13.33	6.67	—	—	—
Lynn	77,025	23	5	8.70	—	4.35	—	—
New Bedford	74,321	25	14	40.00	12.00	4.00	—	—
Springfield	73,484	8	—	25.00	—	—	12.50	—
Lawrence	69,939	21	11	23.81	19.05	4.76	—	4.76
Somerville	68,188	18	5	27.78	11.11	—	5.56	—
Holyoke	49,124	14	4	7.14	35.71	—	—	—
Brockton	47,782	8	1	12.50	—	—	—	—
Malden	37,980	7	3	—	14.29	—	—	—
Haverhill	37,818	4	2	50.00	50.00	—	25.00	—
Salem	37,586	8	2	—	—	—	—	—
Chelsea	37,277	15	5	20.00	6.67	—	—	—
Newton	36,694	10	3	10.00	20.00	—	—	—
Fitchburg	33,017	9	1	—	11.11	—	—	—
Taunton	30,952	12	3	16.67	—	—	—	—
Everett	29,108	4	—	25.00	—	—	—	—
Quincy	28,087	9	2	11.11	11.11	—	11.11	—
Waltham	26,239	8	1	12.50	37.50	—	12.50	—
Gloucester	26,006	—	—	—	—	—	—	—
Pittsfield	25,000	10	3	30.00	—	—	—	—
Brookline	23,424	—	—	—	—	—	—	—
North Adams	22,125	5	1	40.00	20.00	20.00	—	—
Chicopee	20,187	5	2	—	—	—	—	—
Northampton	19,942	6	2	—	33.33	—	—	—
Medford	19,638	3	—	—	—	—	—	—
Beverly	15,222	6	—	16.67	—	—	—	—
Newburyport	14,673	1	1	—	—	—	—	—
Hyde Park	14,402	2	1	—	—	—	—	—
Woburn	14,401	4	1	—	—	—	—	—
Melrose	14,294	6	1	33.33	16.67	—	—	—
Leominster	14,290	—	—	—	—	—	—	—
Marlboro	14,072	4	0	50.00	—	—	—	—
Westfield	13,609	1	—	—	—	—	—	—
Clinton	13,105	1	0	100.00	—	—	—	—
Peabody	13,097	—	—	—	—	—	—	—
Attleboro	12,702	—	—	—	—	—	—	—
Revere	12,647	1	—	100.00	—	—	100.00	—
Adams	12,482	—	—	—	—	—	—	—
Milford	12,105	—	—	—	—	—	—	—
Gardner	11,981	—	—	—	—	—	—	—
Weymouth	11,585	—	—	—	—	—	—	—
Framingham	11,549	—	—	—	—	—	—	—
Watertown	11,202	2	0	—	—	—	—	—
Plymouth	11,118	—	—	—	—	—	—	—
Southbridge	10,947	4	2	50.00	—	25.00	—	—
Wakefield	—	—	—	—	—	—	—	—

* As last reported.

Deaths reported, 2,933; under five years of age, 852; principal infectious diseases (smallpox, measles, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption), 735; acute lung diseases 315, consumption 352, scarlet fever 10, whooping cough 9, cerebrospinal meningitis 7, smallpox 0, erysipelas 6, puerperal fever 6, measles 6, typhoid fever 59, diarrheal diseases 215, diphtheria and croup 64.

From whooping cough, New York 5, Chicago, Philadelphia, Baltimore and Lowell, 1 each. From scarlet fever, New York 4, Chicago, Philadelphia and Baltimore 1 each, Pittsburg, 3. From cerebrospinal meningitis, New York 5, Providence 1, Lawrence 1. From erysipelas, Chicago, Baltimore, Providence, Worcester, Pittsfield and Clinton, 1 each. From typhoid fever, New York 19, Chicago 8, Philadelphia 5, Baltimore 7, Pittsburg 6, Providence 2, Boston 4, Worcester, Cambridge, Springfield, Somerville, Haverhill, Quincy, Waltham and Revere 1 each. From measles, New York 2, Chicago, Boston 1, Lawrence 2.

In the seventy-six great towns of England and Wales, with an estimated population of 15,609,377, for the week ending Oct. 21, 1905, the death-rate was 14.1. Deaths reported 4,211; acute diseases of the respiratory organs (London) 112, whooping cough 46, diphtheria 46, measles 55, smallpox 0, scarlet fever 51.

The death rate ranged from 5.8 in Tottenham to 25.4 in Rochdale; London 14.8, West Ham 12.5, Brighton 15.2, Southampton 14.1, Plymouth 11.7, Bristol 14.0, Birmingham 14.5, Leicester 12.6 Nottingham 13.1, Birkenhead 19.3, Liverpool 18.1, Wigan 17.5, Bolton 15.2, Manchester 17.7, Salford 13.3, Halifax 13.5, Bradford 12.5, Leeds 11.0, Hull, 13.1, Sheffield 12.3, Newcastle-on-Tyne 13.2, Cardiff 13.0, Rhondda 10.8, Merthyr Tydfil 14.1, Wallasey 10.0, Middlesbrough 14.8.

METEOROLOGICAL RECORD.

For the week ending Oct. 28, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

DATE	Barometer.	Thermometer.			Relative humidity.			Direction of wind.		Velocity of wind.		We'th'r *		Rainfall in inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A.M.	8.00 P.M.	Daily mean.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	
S. 22	30.02	44	53	36	62	51	56	W	W	10	4	C.	C.	0
M. 23	30.06	46	53	39	69	62	66	W	W	6	5	O.	C.	0
T. 24	30.10	52	62	41	56	76	66	S W	S W	8	10	C.	O.	T.
W. 25	30.18	45	53	37	61	44	52	N W	N	8	10	O.	O.	0
T. 26	30.30	37	42	32	58	63	60	N	N E	12	12	C.	C.	0
F. 27	30.26	40	48	32	73	68	70	N	S	11	8	O.	C.	0
S. 28	30.34	49	55	43	69	63	66	W	N W	9	7	O.	O.	0
☞	30.18		52	37			62							T.

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Means for the week.

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING NOVEMBER 4, 1905.

E. O. HUNTINGTON, surgeon. Detached from the Navy Department and ordered home to wait orders.

R. A. CAMPBELL, acting assistant surgeon. Detached from duty with Naval Recruiting Party No. 5, Nov. 13, and ordered to the Naval Recruiting Rendezvous, Cincinnati, Ohio.

G. L. ANGENY, surgeon. Commissioned surgeon with rank of lieutenant commander from April 24, 1905.

F. M. MUNSON, assistant surgeon. Ordered to the "Lancaster."

SOCIETY NOTICE.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.— There will be a meeting of the Boston Society for Medical Improvement in Sprague Hall, Medical Library Building, on Monday evening, Nov. 20 at 8.15 o'clock. Dr. James C. White will read a paper entitled: "Medical Life in Boston Fifty Years Ago." All members of the profession are invited to be present. ARTHUR K. STONE, M.D., *Secretary.*

RECENT DEATHS.

GEORGE NELSON MUNSELL, M.D., M.M.S.S., of Harwich, died Nov. 2, 1905, aged seventy years.

ANDREW MARTIN PIERCE, M.D., M.M.S.S., died in New Bedford, Nov. 6, 1905, aged fifty-three years.

ERRATUM.

The death of Nomus Paige, M.D., of Taunton, reported in the JOURNAL, Sept. 7, was an error.

BOOKS AND PAMPHLETS RECEIVED.

Clinical Studies at Mount St. Rose. By William Porter, M.D. Reprint.

Report of Working Party No. 2, Yellow Fever Institute. Experimental Studies in Yellow Fever and Malaria at Vera Cruz, Mexico. By M. J. Rosenau, Passed Assistant Surgeon; Herman B. Parker, Passed Assistant Surgeon; Edward Francis, Assistant Surgeon; George E. Beyer, Acting Assistant Surgeon. Washington. 1905.

The Medical Diseases of Egypt. By F. M. Sandwith, M.D., F.R.C.P. Part I. London: Henry Kimpton. 1905.

Fourteenth Annual Meeting. Transactions of the Western Surgical and Gynecological Association.

Original Articles.

THE CITY PHYSICIAN, HIS DUTIES AND RESPONSIBILITIES.*

BY JOHN H. McCOLLOM, M.D.,

Physician for Infectious Diseases, Boston City Hospital; Resident Physician, South Department (Infectious Service); Assistant Professor of Contagious Diseases, Medical Department, Harvard University, formerly City Physician of Boston.

THE title City Physician is a misnomer. The proper term for this officer should be medical inspector. His duties consist largely in investigating the cause of epidemics and in properly isolating patients ill with infectious diseases. In some cities he is a member of the Board of Health; in others he is an appointee of the Board of Health and acts as its agent.

The sanitary code varies considerably in different countries. The most complete and satisfactory one is that of England. Sanitary laws in many instances must be arbitrary, and they sometimes seem to attack individual liberty. In no country in the world has the idea of individual liberty taken such strong root as in England. The English originated the law of *habeas corpus*, and the common saying that an Englishman's house is his castle shows very clearly how jealous the Englishman is of his individual rights; notwithstanding this, he submits willingly to laws which deprive him of a certain amount of individual license.

After the ravages of cholera in 1832 and 1833 preventive medicine commenced to have an important influence in reducing the death-rate of infectious diseases.

The sanitary administration of England is, in accordance with the Public Health Act of 1875, in the hands of a central authority, the local government board, and local authorities, the local boards of health.

"The local Government Board consists of a president, nominated by the King and the following *ex officio* members: the Lord President of the Privy Council, all the principal Secretaries of State for the time being, the Lord Privy Seal, the Chancellor of the Exchequer, a Parliamentary Secretary and a permanent Secretary.

"The president and secretaries are, properly speaking, the directors of the local government board, the other members being only consulted on matters of prime importance.

"Nine special departments are controlled by the local government board:

"(1) Poor law administration; (2) legal questions; (3) sanitary regulations respecting buildings; (4) sanitary regulations respecting sewers, streets, etc.; (5) medical and hygienic matters; (6) vaccination; (7) the hygiene of factories; (8) the water supply of London; (9) statistics.

"Medical and sanitary matters are under the direction of a medical officer and an assistant medical officer. There are also nine medical inspectors, whose duty it is by inspection to check the carrying out of local sanitary measures, and also to give such special directions as they may find necessary. Their reports are addressed to the medical officer."

* Read by invitation at the Meeting of the Massachusetts Association of City Physicians, Oct. 17, 1903.

The duties of a medical officer of health are explicitly stated by the local government board and comprise some eighteen sections; they are as follows:

"1. He shall inform himself as far as practicable respecting all influences affecting or threatening to affect injuriously the public health within the district.

"2. He shall inquire into and ascertain by such means as are at his disposal the causes, origin and distribution of diseases within the district, and ascertain to what extent the same have depended on conditions capable of removal or mitigation.

"3. He shall by inspection of the district, both systematically at certain periods, and at intervals as occasion may require, keep himself informed of the conditions injurious to health existing therein.

"4. He shall be prepared to advise the sanitary authority on all matters affecting the health of the district, and on all sanitary points involved in the action of the sanitary authority; and in cases requiring it, he shall certify for the guidance of the sanitary authority or of the justices, as to any matter in respect of which the certificate of a medical officer of health or a medical practitioner is required as the basis or in aid of sanitary action.

"5. He shall advise the sanitary authority on any question relating to health involved in the framing and subsequent working of such by-laws and regulations as they may have power to make, and as to the adoption by the sanitary authority of the Infectious Disease (Prevention) Act, 1890, or of any section or sections of such act.

"6. On receiving information of the outbreak of any contagious, infectious or epidemic disease of a dangerous character within the district, he shall visit without delay the spot where the outbreak has occurred, and inquire into the causes and circumstances of such outbreak, and in case he is not satisfied that all due precautions are being taken, he shall advise the persons competent to act as to the measures which may appear to him to be required to prevent the extension of the disease, and take such measures for the prevention of disease as he is legally authorized to take under any statute in force in the district or by any resolution of the sanitary authority.

"7. Subject to the instructions of the sanitary authority, he shall direct or superintend the work of the inspector of nuisances in the way and to the extent that the sanitary authority shall approve, and on receiving information from the inspector of nuisances that his intervention is required in consequence of the existence of any nuisance injurious to health, or of any overcrowding in a house, he shall, as early as practicable, take such steps as he is legally authorized to take under any statute in force in the district, or by any resolution of the sanitary authority, as the circumstances of the case may justify and require.

"8. In any case in which it may appear to him to be necessary or advisable, or in which he shall be so directed by the sanitary authority, he shall himself inspect and examine any animal, carcass, meat, poultry, game, flesh, fish, fruit, vegetables, corn, bread, flour or milk, and any other article to which the provisions of the Public Health Act, 1875, in this behalf apply, exposed for sale, or deposited for the purpose of sale or of preparation of sale, and intended for the food of man, which is deemed to be diseased, or unsound, or unwholesome, or unfit for the food of man; and if he finds that such animal or article is diseased, or unsound, or unwholesome, or unfit for the food of man, he shall give such directions as may be necessary for causing the same to be dealt with by a justice according to the provisions of the statutes applicable to the case.

"[Ordinarily the inspector of nuisances makes the necessary inspections, consulting the medical officer

of health before seizing in cases of exceptional difficulty, in other cases afterwards.]

"9. He shall perform all the duties imposed upon him by any by-laws and regulations of the sanitary authority, duly confirmed where confirmation is legally required, in respect of any matter affecting the public health, and touching which they are authorized to frame by-laws and regulations.

"10. He shall inquire into any offensive process of trade carried on within the district, and report on the appropriate means for the prevention of any nuisance or injury to health therefrom.

"11. He shall attend at the office of the sanitary authority or at some other appointed place, at such stated times as they may direct.

"12. He shall from time to time report in writing to the sanitary authority his proceedings, and the measures which may require to be adopted for the improvement or protection of the public health in the district. He shall in like manner report with respect to the sickness and mortality within the district, so far as he has been enabled to ascertain the same.

"13. He shall keep a book or books, to be provided by the sanitary authority, in which he shall make an entry of his visits, and notes of his observations and instructions thereon, and also the date and nature of applications made to him, the date and result of the action taken thereon and of any other action taken on previous reports; and shall produce such book or books, whenever required, to the sanitary authority.

"14. He shall also make an annual report to the sanitary authority, up to the end of December in each year, comprising a summary of the action taken, or which he has advised the sanitary authority to take, during the year for preventing the spread of disease, and an account of the sanitary state of his district generally at the end of the year. The report shall also contain an account of the inquiries which he has made as to conditions injurious to health existing in the district, and of the proceedings in which he has taken part or advised under any statute, so far as such proceedings relate to those conditions; and also an account of the supervision exercised by him, or on his advice, for sanitary purposes over places and houses that the sanitary authority have power to regulate, with the nature and results of any proceedings which may have been so required and taken in respect of the same during the year. The report shall also record the action taken by him, or on his advice, during the year, in regard to offensive trades, to dairies, cow sheds and milk shops and to factories and workshops. The report shall also contain tabular statements (on forms to be supplied [the local Government Board] or to the like effect) of the sickness and mortality within the district, classified according to diseases, ages and localities:

"Provided, that, if the medical officer of health shall cease to hold office before the thirty-first day of December, in any year, he shall make the like report for so much of the year as shall have expired when he ceases to hold office.

"15. He shall give immediate information to us of any outbreak of dangerous epidemic disease within the district, and shall transmit to us a copy of each annual report and of any special report. He shall make a special report to us of the grounds of any advice which he may give to the sanitary authority with a view to their requiring the closure of any school or schools, in pursuance of the Code of Regulations approved by the Education Department, and for the time being in force.

"16. At the same time that he gives information to us of an outbreak of infectious disease, or transmits to us a copy of his annual repart or of any special report, he shall give the like information or transmit a copy of such report to the County Council of the county within which his district may be situated.

"17. In matters not specifically provided for in this order, he shall observe and execute any instructions issued by us, and the lawful orders and directions of the sanitary authority applicable to his office.

"18. Whenever we shall make regulations for all or any of the purposes specified in Section 134[1] of the Public Health Act, 1875, and shall declare the regulations so made to be in force within any area comprising the whole or any part of the district, he shall observe such regulations, so far as the same relate to or concern his office."[2]

In 1776 the first steps were taken in France for the establishment of a public sanitary service. Each district has a council of public health, which corresponds to our boards of health. The duties of the medical officer of health are practically the same as those in England.

In other continental countries the rules and regulations regarding infectious diseases and other sanitary matters are quite strict and rigidly enforced.

In this country preventive medicine has not received the attention that it should. The science of preventive medicine which originated the idea of boards of health is yet in its infancy, and although much has been accomplished in the past, we may, with the advances in bacteriology, confidently hope that in future much more will be done in the way of eradicating disease of an infectious nature. It is a fundamental principle that, in order to limit the spread of a disease, its cause should be discovered. It is in this direction that valuable work has been done the past few years not only by foreign investigators, but also by our own State Board of Health. The establishment of local health boards is no new thing, but the methods incident to increased knowledge of disease, as well as the power and responsibility of health officers, have materially changed. In 1797, more than one hundred years ago, an act of the legislature was passed authorizing the establishment of local boards of health. This act was changed slightly in 1817, and again in 1878. The text of the Act of 1895, now in operation, is as follows:

"Every town in the Commonwealth may elect a board of health by ballot at the annual meeting of the town, or at a meeting legally warned for the purpose, consisting of three persons, to serve, one for the term of three years, one for the term of two years and one for the term of one year, beginning with the day following such town meeting or until their respective successors are chosen and qualified; and thereafter such town shall, at its annual town meeting, choose in the same manner one person who shall hold office for three years from the day following such town meeting or until another is chosen and qualified in his stead. If no such board is chosen the selectmen shall constitute such board of health."

[1] Such regulations relate to (1) the speedy interment of the dead; (2) house-to-house visitation; (3) the provision of medical aid and accommodation, the promotion of cleansing, ventilation and disinfection, and the guarding against the spread of disease; and may be made by the Local Government Board when any part of England appears to be threatened with or is affected by any formidable epidemic, endemic or infectious disease.

[2] A Treatise on Public Health, by Albert Palmberg and Arthur Newsholme, M.D., London, D.P.H. London, 1893.

It will be seen from this that there is no mention of a physician on the board, but in 1894 an act was passed in which it was expressly stated that in cities and towns of more than five thousand inhabitants one member of the board should be a physician. In the acts of the legislature of 1895, so much of Section 3 of Chapter 218 of the acts of the year 1894 as provides that one member of the board of health shall be a physician shall not apply to towns in which the selectmen constitute the board of health.

The organization of a state board of health is of much more recent date than that of local or city and town boards of health. In 1849 the idea of the State Board of Health of Massachusetts was brought to public notice, but the board was not established until twenty years later. There had been during the year 1849 a great deal of infectious disease, and the death-rate had been extremely high in Massachusetts. Dysentery, scarlet fever and typhoid fever had been extremely prevalent, and in addition Asiatic cholera had invaded the state causing the death of about 1,200 of the population. In that year a commission was appointed by the legislature to report upon the sanitary condition of the state. This commission advised the establishment of a general board of health, the duties of which were very clearly stated. When the board was finally established in 1869 under the title of the State Board of Health and Vital Statistics, it was organized very nearly in accord with the suggestions of the sanitary commission of 1849. In 1886 the board was reorganized with enlarged powers. The members of this commission were Lemuel Shattuck, Nathaniel P. Banks and Jehiel Abbott, men identified with the history of the state fifty years ago, one of whom was governor at a later period. No one of them was a physician, and, therefore, the medical profession must be relieved of the public suggestion of making an exaggerated claim for the importance of sanitary science. In the introduction of the report of the commission relative to the importance of public health regulations, the following passage appears:

"We believe that the conditions of perfect health, either public or personal, are seldom or never attained, though attainable; that the average length of human life may be very much extended, and its physical power greatly augmented; that in every year, within this Commonwealth, thousands of lives are lost which might have been saved; that tens of thousands of cases of sickness occur which might have been prevented; that a vast amount of unnecessarily impaired health and physical debility exists among those not actually confined by sickness; that these preventable evils require an enormous expenditure and loss of money, and impose upon the people unnumbered and immeasurable calamities, pucuniary, social, physical, mental and moral, which might be avoided; that means exist, within our reach, for their mitigation or removal; and that measures for prevention will effect infinitely more than remedies for the cure of disease."

Admirable as this report of the sanitary commission was it took twenty years for the public to appreciate the importance of a state board of health that should have cognizance of all diseases dangerous to the public health. Since 1869, when the board of health was organized, rapid advancements have been made in the prevention of contagious diseases, not only in man, but in the lower animals, and the power of a board of health to abate nuisances has been very much increased. The state board of health as well as local boards of health now, by statute law, have power to abate nuisances, sources of filth and causes of sickness, whether arising from contagious diseases or due to an imperfect water supply. In the early history of health boards very little is said regarding diphtheria and scarlet fever. The etiology of typhoid fever at that time was not known, and, therefore, very little attention was paid by local boards of health to the water supply. The cause of cholera was not known, and therefore very little was done in preventing epidemics of this disease. Smallpox, however, as it was the most dreaded and fatal disease of the early part of the nineteenth century, did receive great attention at that time. In 1802 the Boston Board of Health instituted experiments remarkable for their accuracy to demonstrate the protective power of vaccination. These experiments were unique in their nature and are worthy the careful consideration of any one interested in this subject.

The acts of the legislature of 1886, Chapter 101, section 1, establishing a state board of health, read as follows:

"The governor with the advice and consent of the council shall appoint seven persons who shall constitute the state board of health. The persons so appointed shall hold their offices for seven years, provided that the terms of office of the seven first appointed shall be so arranged that the term of one shall expire each year. All vacancies on said board, whether occurring by expiration of term, or otherwise, shall be filled by the governor with the advice and consent of the council."

Section 2 of the same chapter is as follows:

"The board shall be provided with rooms at the expense of the state, and shall hold meetings each month on a day fixed by itself, and at such other times as may be needful. It shall make its own by-laws, and shall make a report of its doings to the governor and council on or before the thirty-first day of December in each year, such report being made up to the thirtieth day of September, inclusive."

In the acts of 1886, Chapter 101, Section 3, and in the acts of 1889 the duties of the secretary are detailed. The text of these acts which are now in operation is as follows:

"The board shall elect a secretary, who shall be the executive officer and shall hold office during the pleasure of the board. He shall perform or superintend the work prescribed by law for the state board of health, and as directed by the board, and such other duties as the board may require. He shall not be *ex officio* a member of

the board, but the board may, whenever it shall be deemed necessary, elect one of the members secretary *pro tempore*, who may in the absence or disability of the secretary perform the duties of that officer. The secretary shall receive from the treasury an annual salary of three thousand dollars and his necessary traveling expenses incurred in the performance of official duties. No member of the board shall receive any compensation, but the actual personal expenses of any member while engaged in the duties of the board shall be paid from the treasury, after they have been audited by the board. All other necessary expenses arising in the secretary's office or from the discharge of the duties of the board shall be paid out of the treasury in the same manner as those of the different departments of the government."

In the acts of 1886, Chapter 104, Section 4, the powers and duties of the state board of health are thus defined:

"The state board of health shall take cognizance of the interests of health and life among the citizens of the Commonwealth. It shall make sanitary investigations and inquiries in respect to the causes of disease, and especially of epidemics and the sources of mortality and the effects of localities, employments, conditions and circumstances, on the public health, and shall gather such information in respect to those matters as it may deem proper, for diffusion among the people. It shall advise the government in regard to the location and other sanitary conditions of any public institutions."

In the acts of 1894, Chapter 218, Section 4, further duties of the board in case of contagious diseases are thus defined:

"If smallpox or any other contagious or infectious disease dangerous to the public health exists, or is likely to exist in any place within the state, the state board shall investigate the same, and the means of preventing the spread thereof, and shall consult thereon with the local authorities, and shall have co-ordinate powers as a board of health, in every place, with the board of health thereof or with the mayor and aldermen or the selectmen, if no such board or officer exists in such place."

One very important duty of a board of health is that regarding death certificates. It is by careful supervision of these that frequently the prevalence of any disease in a given locality can be determined.

A second important duty of the board is the supervision of the water supply. Typhoid fever and cholera are disseminated by a polluted water supply. The history of Boston before and since the introduction of Cochituate water abundantly proves this. In Boston, for instance, before there was a general supply of water from a non-infected locality, the ratio of deaths from typhoid fever was very large. For the four years from 1846 to 1849 the average rate of mortality from this disease was 17.4 per ten thousand of the living; after the introduction of Cochituate water in 1848 the rate commenced to decline, so that from 1850 to 1854, inclusive, the average was 8.2, less than one half as great as in the previous four years. Since 1854 the rate has, with one exception, that of the semi-decade from 1870 to 1874, inclusive, gradually diminished to 2.20 per ten thousand, the rate for 1904.

In the cholera epidemics of 1832, 1849, 1854, and 1866 the dangers of an infected water supply are manifest. The history of the outbreaks of this disease in Hamburg, in 1892, as compared with Altona, is an apt illustration of this fact. The water supply of Hamburg was taken immediately from the Elbe without proper filtration; the supply of Altona was from the same source, but before the water was used it was subjected to very careful filtration. In Hamburg there was a frightful epidemic of cholera; in Altona, a short distance from Hamburg, there were only a few cases of the disease. Hamburg, unlike most cities, has learned wisdom from experience and has now one of the most elaborate and perfect systems of water filtration in the world.

A third important duty of a board of health is a medical examination of dairies and of the men employed in these dairies, for it has been demonstrated time and time again that a man ill with walking typhoid may infect the milk so as to cause an outbreak of this disease. Some five epidemics of typhoid fever in Massachusetts of more or less severity have been traced to infected milk supplies. As bearing on this fact, it is of interest to note that in the foreign cities where the ratio of deaths from typhoid fever is much lower than in this country, there is a most rigid and careful supervision of the milk farms, both as to their sanitary condition and as to the health of the employees. In London, for instance, where typhoid fever is comparatively rare, large dairy companies have been formed whose supply of milk is based on most minute and rigorous regulations. To prevent the spread of infectious diseases by milk, the farmer is required by his contract to call a physician if any person employed in his dairy is taken ill. If the disease is infectious, the secretary of the company must be at once informed, who will indicate the measures to be taken. In the event of serious disease the delivery of milk from the farm is forbidden. Arrangements are made with local medical officers of health to obtain information as to each case of infectious disease arising in the neighborhood of a dairy. In Berlin, also, there are stringent regulations regarding persons who have come in contact with any infectious disease having anything to do with milk. Similar observations are true regarding Vienna and Glasgow. In Paris, a large proportion of the milk comes from dairies situated in the city. The employees of these dairies are subjected to a careful medical supervision, and it is very reasonable to suppose that this has a decided effect in reducing the death-rate from typhoid fever in that city. In Boston, the milk comes from so many different places and such long distances and passes through so many hands that it would be difficult to absolutely trace the source of infection in a given case. But

there can be no doubt that in Boston, as well as in many other cities, infected milk may be, and is, much more frequently than is generally supposed, a cause of an outbreak of typhoid fever. While this statement so far as Boston is concerned may not be capable of positive demonstration, it is certainly worthy of careful consideration.

A fourth duty of a board of health is the establishment of compulsory notification of all contagious diseases dangerous to the public health. This was established in England quite a number of years ago and was known as the Compulsory Notification Act, and for a time was bitterly opposed not only by the laity but also by physicians. It was claimed that it interfered with private rights; that it was a source of annoyance to the individual; and that it interfered with his ability to earn a living. Some physicians opposed it on the ground that it violated professional etiquette. After much discussion the act was finally passed in England and is now generally enforced. All contagious diseases are not necessarily dangerous to the public health and, therefore, while a board of health has power to adjudicate any disease as injurious to the public health, yet, it should be careful not to bring itself into contempt by causing compulsory notification of diseases which, while they may be extremely annoying to the individual, are not dangerous to life. For instance, scabies is a contagious disease, but it is not, annoying as it may be, dangerous to the public health. The degree of infectivity should also be an important factor in deciding the question of compulsory notification. Placarding the houses, in certain instances, where there is a case of infectious disease should be the result of the compulsory notification. For over a hundred years a compulsory notification of smallpox has been required. In Boston it was not until 1877 that notification was required in cases of scarlet fever. In 1878 diphtheria and croup were placed on the list of compulsory notification. In 1881 typhoid fever was also placed on this list. Within three years it has been required to report cases of consumption. The diseases of which a report is required by the Board of Health of Boston at the present time are diphtheria and croup, scarlet fever, cholera, smallpox, measles, cerebrospinal meningitis, chickenpox, typhus fever, typhoid fever and consumption.

A fifth duty of a board of health, and perhaps the most important, is the establishment of isolation hospitals, or fever hospitals as they are called in England, for the care and treatment of patients ill with infectious diseases. A hundred years ago smallpox hospitals were established in nearly every large city, because the fear of smallpox was much greater than that of any of the other infectious diseases. Some thirty-five years ago Glasgow, which had suffered more than any other city from the inroads of diphtheria, scarlet fever and measles, established the first fever hospital for the treatment of these diseases. When in 1862 an act was passed to provide a fever hospital in Glasgow, there were many offers made of existing buildings, and at last a willing proprietor offered a disused mill for the purpose. But the moment the proposal became public it excited the greatest opposition in the neighborhood. Finally it was decided to purchase a site and to erect a building thereon. A beginning was made in the early winter of 1864, and a pavilion hospital of wood on brick foundations, erected, furnished, and opened with 136 beds on the 25th of April, 1865; this was the first Municipal Fever Hospital. It must be borne in mind that at that time the population of Glasgow was about 428,123 and that previous to the erection of this hospital there were no accommodations for diphtheria, scarlet fever and measles. These diseases ran riot in the crowded tenement houses. Isolation was impossible; whole families would be swept away by either diphtheria or scarlet fever.

Boston at that time with a population of 192,318 had no provision for infectious diseases other than smallpox. The effect of the first municipal fever hospital at Glasgow which, as has just been stated, was opened on the 25th of April, 1865, had had such an effect in diminishing the death-rate from infectious diseases, that a large estate of some fifty or sixty acres was purchased for hospital purposes. On this estate was erected a pavilion hospital capable of accommodating some four of five hundred patients, and there was also a washing and disinfecting house where bed linen used by patients ill with infectious diseases, treated at their homes, could be sent to be disinfected and washed. The hospital itself was opened the latter part of 1870, and is known as the Belvidere Fever Hospital of the City of Glasgow. It is just outside the city, far enough removed from the turmoil and noise of a city; bounded on one side by the river Clyde and on two sides by fields. Since the opening of this hospital in 1870 to the 31st of May, 1894, there were treated 56,328 patients ill with the following diseases, viz.: typhus, 5,374; relapsing fever, 2,977; enteric fever, which is known in this country as typhoid fever, 8,449; scarlet fever, 19,178; measles, 7,885; whooping cough, 3,169; diphtheria, 617; erysipelas, 1,446; other infectious diseases, 267, and diseases not infectious, 6,139. It is interesting to note that during this period of time the percentage of mortality in scarlet fever was 8.1; that the death-rate in measles was 8.8%, that whooping cough had a mortality of 19.2%, and that the death-rate of diphtheria was 42.3%. The health authorities, not satisfied with the hospital accommodations at Belvidere because they were unable at certain times of the year to give each patient 2,000 cubic feet of air space, and because they were unable to vacate certain wards for six months for the purposes of disinfection and renovation, decided to purchase land for a second fever hospital known as the Ruchill Hospital, which was opened by her Royal Highness Princess Christian, on the thirteenth day of June, 1900. A short description of this hospital is not inappropriate at the present time and is quoted *verbatim* from the report of the medical referees as follows:

"The medical referees, who were asked, in 1870, to give their opinion on the estate of Belvidere as a hospital site, while approving of it, stated that its distance from an extensive part of the city would render it necessary that the hospital in Parliamentary Road should be maintained, or that some other hospital, adapted in point of situation for the reception of patients from the northern and western districts, be made available in future. No site could be found within the municipal boundaries, and legal disabilities made it impossible to acquire land for such a purpose outside, until the obstacle was removed by the 'Glasgow Police (Amendment) Act, 1890,' Clause 6 of which enables the town council to acquire hospitals 'either within or without the city.' As soon as the way was thus cleared, the corporation took vigorous action in the matter, and in 1892 obtained power to purchase the lands of Ruchill for the joint purpose of laying out a public park and building a hospital for infectious diseases. In the previous year, the boundaries of the city were extended to include the territory surrounding the hospital, as well as various other suburban areas.

"The site on which the hospital is built was selected, after much consideration, because of its accessibility from numerous districts occupied by an ever-increasing working-class population, and because its altitude confers on it the benefits derivable from as much free air and sunshine as can be obtained in an industrial neighborhood. The adjacency of the public park affords permanent free space on the westward side of the hospital, while the other boundaries are ample enough to prevent the undue encroachment of buildings. It was pointed out in a joint report by the medical officer of health and the city engineer, dated Jan. 28, 1891, before the corporation purchased the site, that the level of the upper part of the ground was above the gravitation delivery of the water supply, and that it would be necessary to provide storage for the service of the hospital. Adequate arrangements for this purpose are installed in the water tower, which forms the most conspicuous feature of the central group of buildings.

"The entrance to the hospital is in Bilsland Drive. No other access is provided, and the discipline of the establishment is thus simplified.

"The hospital includes thirty-four distinct blocks of buildings, the principal of which are sixteen pavilions for the reception of patients. Twelve of these are large pavilions, each having beds for 30 patients, or 360 in all, while the four smaller pavilions will each accommodate 20 patients, or 80 altogether. There is thus provided accommodation for 440 patients, allowing upwards of two thousand cubic feet to each bed.

"Much consideration has been given to the design and general arrangements of these pavilions, particularly in regard to ventilation and sanitary arrangement, and the systems adopted have met with general approval from those specialists who have had the opportunity of examining them.

"The experience gained in the earlier construction of Belvidere Hospital has been invaluable, and all the features susceptible of improvement in that institution have been carefully investigated. The arrangements of other hospitals in different parts of the Kingdom have also been studied, and such details as appeared adaptable have been embodied in the design, with the result that Ruchill Hospital may fairly challenge comparison with any kindred institution at home or abroad.

"Second in interest to the pavilions is the administrative block; a large building, three stories in height, with a frontage of 240 feet, the wing walls extending to 189 feet.

(*To be continued.*)

A PRACTICAL PHOTOMETRIC METHOD FOR CASE RECORD.

BY G. W. FITZ, M.D., BOSTON.

THE photographic method of recording deformities has been used since dry plate photography first made it available for amateur use. Many, however, have been deterred because the control of the camera presented seemingly insurmountable difficulties, and the expense of development and printing and the difficulties of properly labelling and caring for plates were considerable. To overcome these defects by insuring convenience and accuracy of handling and economy of time, expense and storage, the following method and apparatus have been devised by the writer and carefully tested by long practical use,[1] but are now for the first time described.

The method is briefly as follows:

1. To adjust the focus of the lens for such selected image sizes of the subject as will give the desired ratios of size between subject and image (such as 6 = 100, 10 = 100, 14 = 100, 20 = 100, etc.) and to mark these foci and the corresponding distances of the subject from the camera on the adjusting part of the camera or lens so that the focus can be instantly secured by merely setting an index to a mark and adjusting the subject's distance by means of a graduated tape or knotted string, and the photograph taken in the exact ratio without any delay for focusing or other adjustment.

2. To make the camera so that it will take three or four photographs of the same individual in different aspects upon the same plate, thereby avoiding confusion in labelling and loss of identity of the several photographs.

3. To photograph with each subject an indentifying number which absolutely identifies every photograph.

4. To make a transparent scale based on the ratios of subject size to the image size selected for records, by which the photographic images may be measured as to any dimension, asymmetry or deformity, directly in inches or centimeters, as if one were measuring the subject himself, by the application of the scale to the face of the photograph.

The lens. — Although expensive modern lenses are the most satisfactory, yet a rapid rectilinear lens of the cheaper sort, such as a Darlot, will ordinarily give thoroughly satisfactory results, provided that one does not need to get a large image in a poorly lighted and cramped room.[2] Unless one is very familiar with the working values of different kinds of lenses, however, it is wisest to test them under the conditions of use before making a choice for purchase.

It is important to use a lens of the longest focus possible in the space available for photographing if the room is short, since it will give a

[1] The first multiple camera, a three-phase and the first automatic labelling device were designed and made in 1888 by the writer for use in photographing the students in the Hemenway Gymnasium, Harvard University, where it has since been in constant use.

[2] The Darlot with a slip collar permitting adjustment for focus by movement of the lens itself is so convenient for use in this method that it has been adopted for illustration. (See Fig. 4.) Any lens can be fitted to a slip tube which will serve the same purpose and at the same time save the necessity of making the camera box adjustable

sharper large image of the subject with full aperture than one of shorter focus, and hence permit the shortest exposure. If the distance from the camera to the object is necessarily short and large photographs are desired, it may be necessary to purchase an expensive lens of shorter focus which will work with wide aperture since a cheaper lens may not give satisfactory results when strained in this way. The longer focus

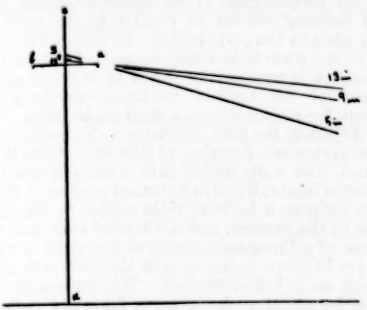


FIG. 1. Projection angles of lenses of focal lengths, 5 in. 9 in. and 13 in., respectively, showing projection of shoulder (a) against anterior posterior vertical mid plane (c d) in photographing a subject 60 in. in height with the camera at mid height. a-b = shoulders, c = top of head. Subject standing with his side to the camera.

lens is also to be preferred for getting a good perspective and the proper relation of projecting parts. This is shown diagrammatically in Fig. 1.

The following table of focal lengths will assist

Focal lengths of lenses.	Distances of object.	Lengths of image of individual 68 in. tall.	Distances[1] of lens to plate.
7 in.	54.6 in.	10 in.	8.0 in.
	66.5 „	8 „	7.8 „
	86.3 „	6 „	7.6 „
	102.2 „	5 „	7.5 „
	126.0 „	4 „	7.4 „
8 „	62.4 „	10 „	9.2 „
	76.0 „	8 „	8.9 „
	98.7 „	6 „	8.7 „
	116.7 „	5 „	8.6 „
	144.0 „	4 „	8.5 „
9 „	70.2 „	10 „	10.3 „
	85.5 „	8 „	10.1 „
	111.0 „	6 „	9.8 „
	131.4 „	5 „	9.7 „
	164.0 „	4 „	9.5 „
10 „	78.0 „	10 „	11.5 „
	95.0 „	8 „	11.2 „
	123.0 „	6 „	10.9 „
	146.0 „	5 „	10.0 „
	180.0 „	4 „	10.6 „
11 „	85.8 „	10 „	12.6 „
	104.5 „	8 „	12.3 „
	135.7 „	6 „	12.0 „
	160.0 „	5 „	11.9 „
	198.0 „	4 „	11.7 „
12 „	93.6 „	10 „	13.8 „
	114.0 „	8 „	13.4 „
	148.0 „	6 „	13.1 „
	175.2 „	5 „	12.9 „
	216.0 „	4 „	12.8 „

Table for determination of required focal lengths of lenses for given room distances and image sizes. — Adapted from P. Brosig. Am. Ann. Photog., 1900, p. 309.

[1] These distances must be considered as approximate, owing to variations in lenses.

in deciding upon the lengths of focus of lenses most convenient for given conditions. It gives the distances required for a full length view only, since larger views of parts of the body are taken at less distances and hence do not count in deciding room capability for photographic purposes:

In deciding the question of available room length it is necessary to determine, preferably experimentally, the position for best illumination of the subject and the direction in which the camera must be placed in order to secure a photograph which will give the best modeling of the body. Having determined these two points, position of subject and of camera, the distance between them becomes the "available distance" of our problem and we are in a position to decide what focal length of lens is best adapted to secure good images. It not infrequently happens that only one half or one third of the room length or width can be used and that the camera must be placed so that it will look into the room containing the subject through a doorway from another room.

The multiple camera. — After settling the lens problem it is necessary to determine the range of focal length ("back focus" or distance from flange to ground glass) of the lens for the largest and smallest images required. The box depth, Fig. 2, must be made equal to the shortest back focus when the lens is pushed home into its collar, less the thickness of wood used for the front of the box, the thickness of the slide carrying the lens and the depth of the plate holder to the film surface of the plate. The breadth and height of the camera may either be made large

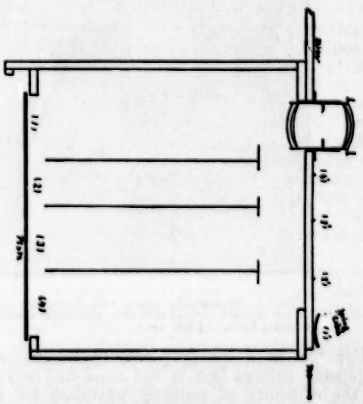


FIG. 2. Diagrammatic section of a four-phase multiple camera. (1), (2), (3), (4), portions of plate occupied by the successive photographs. (1), (2), etc., pins on lens slide for stopping lens in exact position for corresponding photographs. The plate is 5 x 8 in. lens, Darlot No. 2. Scale ½ in. = 1 in.

enough to inclose the plate holder or may be made ½ inch smaller each way by fitting the box flush to the edges of the plate holder.

The dimensions with a scale plan of the camera can then be given to a carpenter who will "gang-

saw" the pieces of ¼-inch mahogany together, so as to make a stout and at the same time light box. The front may be fitted with small brass hooks so as to permit easy removal for adjustment of the partitions. The sliding strip of mahogany to which the lens is fastened is best carried between two narrow guide strips of mahogany by means of ¼-inch brass splines and is stopped at the center of each of the four compartments (into which the box is divided) by a spring catch slipping over the end of a pin in the slide. The partitions are of thin blackened wood each carrying a ¾-inch strip of blackened wood, at right angles on the front end to prevent the light from the lens getting into the adjacent compartments. They may be kept in place either by binding nuts on long screw wires which pass through their corners and rest lightly against the sides of the camera box thus uniting the partitions into one easily removable framework, or by pieces of doweling similiarly treated. Vertically the partitions themselves should fit loosely so as to remain in place. The screw wire and nuts permit adjustment of the spaces, and the whole may be removed and the entire plate used for one large photograph in a moment's time, the conditions of focus, of course, remaining the same.

is required, it is unnecessary to provide a regular ground glass in case the box used does not have one. Any glass will serve, provided that it is coated with some substance which will make it milky so as to receive the images. Beeswax rubbed on the side of the glass toward the lens, a thin coating of uncooked starch paste dried on, or even better an undeveloped gelatine plate will give a fair image.

The ground glass or its substitute, when used for focusing, should be exactly in the plane of the plate in the plate holder. To obtain this position the plate holder may be used if the central partition is removed, or strips of wood or pasteboard of the requisite thickness may be glued upon the face of the glass itself at the ends.

Adjusting the focal distances. — To prepare for the systematic focusing of the lens, drive three 2-inch wire nails lightly into a strip of wood at ½-meter intervals and in a vertical position. Place this strip on a table at right angles to the axial line of the camera, and set behind each nail the flame of a Christmas candle with a piece of oiled paper between them, so that the nails will show black on a bright ground. The camera should now be set at such distances from the nails as will give exactly the desired lengths to the images



FIG. 3. Photographs taken with four-phase multiple camera showing utilization of whole plate surface, plumb line for vertical reference, automatic numbering and dating (November, 1903, No. 614) and method of marking back. (⅛ full size.)

For use as a multiple camera an ordinary collapsing camera box is not available because of the difficulty of properly providing for the partitions, and for the further reason that on account of the wide aperture of lens used and the required accuracy of image size the focal adjustment must be more accurately made than is possible with the ordinary camera box. It is far better to have the box so made as to be useful for no other purpose and hence to be always instantly available for case photographing.

Since by this method no subsequent focusing of the meter (or half meter) when focused with full aperture of lens; for this purpose a millimeter scale should be used and repeated trials made until exact coincidence is obtained. When this is accomplished in exact focus, measure and record the distance from the front of the camera box to the middle nail and mark the lens tube[4] by drawing a sharp knife carefully along the edge of the collar. In this way the image values

[4] In an ordinary camera these marks can be made upon the bottom portion over which the moving front or rear of the camera passes as is sometimes done for a simple focusing scale, but it is not nearly so satisfactory a method.

and object distances were obtained for the lens positions shown engraved on the lens tube in Fig. 4. It is best to use a magnifying glass to test the sharpness of the focus on the ground glass and to be sure that the line of sight is perpendicular to the glass surface in reading the distances between the nail images, to avoid the errors which may be made if one carelessly measures in the line of emergence of the light itself, as may easily be done if the coating on the glass is too transparent.

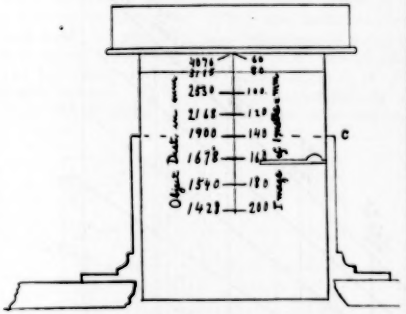


FIG. 4. Lens tube graduated for distances of object and sizes of image of one meter. The edge of the collar forms the index set for a distance of 1,900 mm. giving an image of one meter = 140 mm. = 140-1,000 or 14% of size of subject. (½ natural size.)

A proportional scale for measuring photographs. — Having prepared the table of image sizes as above, one may construct a universal scale for image measurement as shown in Fig. 5. First draw with the utmost precision as traight base line (*a b*) of the length of the longest meter image (or, for greater exactness, of double that length) and erect a perpendicular (*b c*) at one end exactly equal to the longest meter image length. From the upper end, *c*, of this perpendicular draw as carefully as possible a straight diagonal (*c a*) to the remote end of the base line. If one now draws intermediate perpendiculars touching the base line and the diagonal at distances on the base line proportional to the meter image lengths measured, these lines will give the meter images in position for ready multiple subdivision, since if the first perpendicular be divided into ten equal parts by means of dividers [8] and diagonals be drawn to each division, all the perpendiculars will be divided to tenths and each division will stand for 100 mm. or one decimeter for its own scale. These may be subsequently divided again into fifths or tenths as shown, thus giving 10 mm. or 1 cm.

This universal scale cannot be used directly on the photographs to advantage, but from it scales similar to Fig. 6 may be made for standard image sizes. For this purpose clear celluloid 20-1,000 to 15-1,000 inch in thickness is best, and the graduations may be scratched with a needle point.

These scales are useful for all measurements on negatives or prints and have proved themselves superior to any of the methods tried by me previous to devising this. They have the great advantage of being instantly adjustable to any part of the body of which the measurements are required. Thus lengths and breadths are readily measured as well as depths of curves, lengths of chords of curves, inclination of the body from a plumb line, deviation of the spine at various levels from the mid-line between cleft of buttocks and the Vertebra Prominens and other measurements which on the human body cannot otherwise be obtained without elaborate apparatus and much expenditure of time.

Method of measuring with the proportional scale. —The method of applying the scale to a photograph for the measurement of a particular dimension is illustrated in Fig. 5 in which the scale is applied for the measurement of the line *a b*. The end *a* is adjusted to the nearest division of the main scale (in this case 800) which will permit the end *b* to overlap the zero on to the fractional scale. This fractional reading (70) is then added to the main reading (800), giving the total length (870).

In practice the great advantages of this method over that of Oehler,[9] now rather commonly employed, are that the scale can be so adjusted to the photograph that oblique as well as rectangular measurements can be made, and that the scale may be made to tally with the beginning of any desired measurement, so that fractional parts need to be measured at one end only. The importance of the former of these advantages is quickly realized in practice since few dimensions are strictly horizontal or vertical; of the latter, since it is impossible to so adjust the screen as to make the zero line tally with even one fundamental point or line on the subject. Furthermore, the meshwork of lines in the Oehler method is extremely confusing to one trying to get a comprehensive and accurate impression of the photographed figure. The thread screen is, moreover, very delicate and thereby easily injured and somewhat costly and awkward of adjustment.

This method of measuring photographs by means of a proportional scale can be applied to any photograph whose size ratio to its original is known.

A simple method of making a measuring scale for one distance of the subject when the scale and not an exact size ratio to the subject is required and an ordinary camera is used, is to determine the distance and the focus which will give the size of image desired. This distance is then measured, or an inelastic string of the exact length is provided for use in reproducing it, and the focal point is marked on the focus adjusting part of the camera. A strip of paper or a board

[8] This can be avoided by using the divided ruler or tape when it is 10 cm. or any multiple of it; otherwise by prolonging the base line proportionately it is possible to erect the perpendicular which may be divided by the divisions on the scale.

[9] Zeitsch. f. Orthop. Chir. Bd. II, 1893, p. 169–173. This method is to photograph the subject behind a thread screen whereby the entire surface of the photograph is covered with 2.5 cm. squares formed by the intersection of the black cross threads.

is then graduated with heavy ink markings in either inches or centimeters to a length of from three to five feet. This is photographed at the exact distance of the subject as previously determined. If the negatives are to be used for measurement the scale may be prepared directly from the negative, but if paper prints are to be used it is wiser to make the scale from a print treated in the same manner as the case photographs.

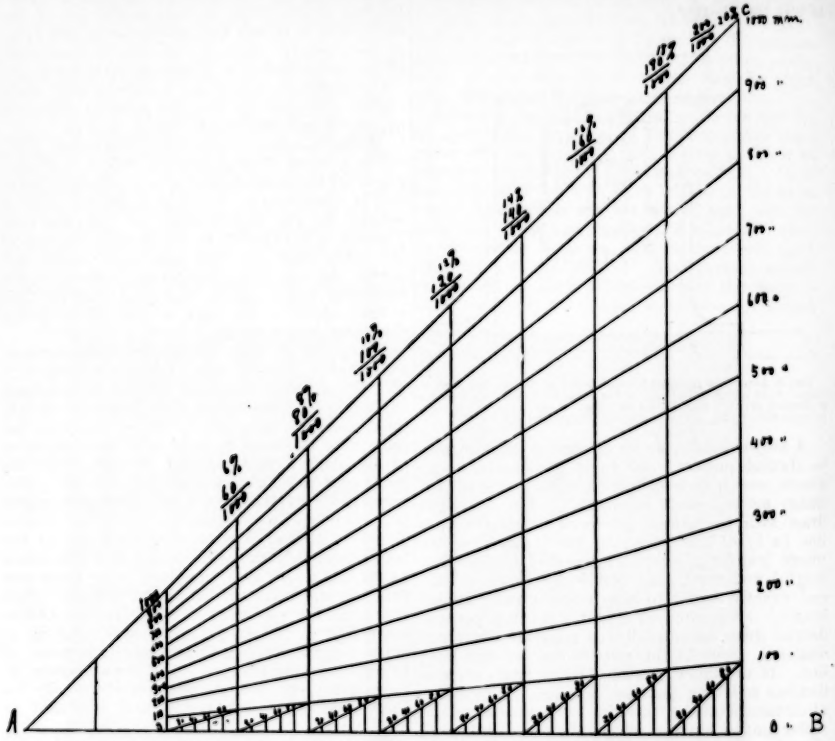


FIG. 5. Scale plan of proportional image sizes of one meter for all distances of object: for lens "D2." (½ full size.)

This is necessitated by the fact that velox paper, for example, shrinks 1% in all directions when after development it is allowed to dry spontaneously and is not burnished, and other papers behave somewhat similarly depending upon the structure of the paper, the character of the film and the method of treatment. Since the glass support of the negative prevents change of size in its film, it is preferable to use the negative for accurate work, especially as it is also much more economical so to do.

Automatic labeling of negatives. — White-gummed numerals one inch in height are sold in packages of ten each. These are moistened and stuck carefully upon a heavy rough surfaced dark photographic mount board cut into pieces of the right size.

The holder is made of sheet metal as shown in Fig. 7 and receives the number cards at the ends. A pin on the back serves to attach the device to the clothing of subject. The holder is coated inside and out with a dead black enamel. To simplify classification by using the same number always for each individual it is convenient to date the photographs by adding the proper numbers as is done, for example, in the figure which reads "September, 1902, No. 485." The holder should be six inches long and five series of number cards 0 to 9 are necessary beside the year cards, '02, etc. This will give a complete series up to 999 cases.

Plates or films. — Rolled films are very attractive because of their lightness and small bulk and for the reason that they can be superposed in the developing tray and several developed at once. This apparent advantage is, however, neutralized by the fact of their greater delicacy,

by their greater expense, by the delay in development of the entire roll of twelve or more exposures until all are used and by their change of size in drying.

Plates, however, have one property lacking in all substitutes, that of furnishing a film support which is practically a true plane and of absolute rigidity and unchanging dimensions thus enabling one to measure the image on the negative with perfect confidence in its accurate ratio to the subject photographed.

Plates are more durable than rolled films both when unexposed or exposed and when developed and dried as negatives. They are more readily filed away for reference and when one is sought it is found with little disturbance of the others and can easily be replaced again when it is no longer needed. This is a very important item when one is using photography for case record,

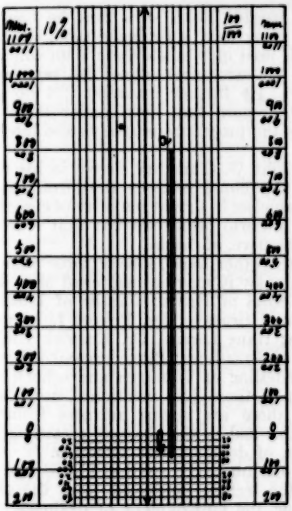


FIG. 6. Transparent measuring scale of celluloid for ratio method: apply scale as shown so that one end of line, as a-b, coincides with the cross line whose distance from (0) is just short of its total length, the other end will then extend by the zero line (0), thus giving the fractional excess (70), length a-b = 870 mm. (½ natural size.)

especially when the negative itself is used for study as it should be for greatest accuracy and economy.

Plate holders. — Light, strong plate holders should be selected with special reference to the particular device to be used for retaining them against the end of the camera box and to the ease with which they can be filled and emptied by feeling in the dark room. No plate holder without stout wooden sides should be considered for an instant, since they will not stand the hard usage which may unavoidably come to them. One should try manipulating the sample holder with the eyes shut,[7] and unless it can be done quickly and safely without touching the face of the plate except at the edges either in filling or emptying it should be unhesitatingly rejected.

Shutter. — Any shutter may be used, but one of simple construction is most convenient. All



FIG. 7. Holder for date and number cards. Each figure is on a separate slip. (Reads No. 485, September, 1902.)

that is needed is that it should open and shut positively so that the exposure may be perfectly controlled from a distance. Automatic shutters which give measured exposures when released, as the Bausch and Lomb, though excellent, are expensive. It is sometimes convenient to have the rubber tubing long enough to control the shutter from the position of the subject, especially in photographing children.

Exposure. — The ordinary exposure varies from one to six seconds, according to light, diaphragm, subject, etc. It is seldom that light enough can be secured in hospitals or offices to permit a shorter exposure than two seconds, but even in the case of a restless child, this is usually found to be sufficiently short. Six seconds is as long an exposure as is permissible even for older children or adults when standing, since it involves a certain amount of body swaying, which cannot be controlled without a back rest. The use of a rest is objectionable for the reason that it leads to greater or less distortion of the body, in that each subject adjusts himself to the rest and consequently is not in normal posture. For other than standing postures, rests are both less objectionable and less necessary. Too short exposures must be avoided owing to the difficulties of developing the plate.

The length of exposure can be conveniently measured by means of a simple pendulum, consisting of any small weight suspended by a string from some fixed point. The distance from the center of the weight to the point of bending of the string at its upper end should be for a one-second swing 39.1 inches. for a half second, 9.78 inches.

Automatic shutters can be adjusted for the proper exposure and then need no attention except to set and release them at the proper times for each exposure.

Instantaneous photographing has small use indoors, owing to the weakness of illumination and consequent difficulty of successfully developing the plate.

Camera stand. — A stand is a not unimportant aid in photographing cases. In emergencies it is possible to use a table or other support but for routine work a good stand is essential. The

[7] Plates should be handled in the dark except when one is developing them, and then they should be kept as nearly in the dark as possible in order to get the full advantage of the sensitiveness of the film and to avoid the "developing" fog which in very short exposures may seriously diminish the value of the plate.

ordinary folding tripod is useless on a polished floor and is awkward and treacherous in all indoor work; the studio stands are expensive as well as clumsy and take up considerable room. There is, however, now on the market, a stand which in structural design combines the advantages of both in that it has a small folding tripod base which, however, becomes rigid when opened out, a central vertical extension giving elevations, of from two and one-half to five feet, and a tilting top. It is excellent for semi-portable use owing to its lightness, strength and compactness when folded and to the quickness with which it may be adjusted. Its chief disadvantage is its tendency to vibration when the camera is set at a high level, but this it shares with most portable stands. It can be neutralized by leaning a light pole or other object against it, or by wedging, lightly, a brace obliquely from the camera to the floor or wall.[8]

TECHNIC EMPLOYED IN THE LAST ONE HUNDRED LAPAROTOMIES WITH THE VIEW OF RESTRICTING THE EMPLOYMENT OF DRAINAGE.

BY L. J. HAMMOND, M.D., PHILADELPHIA, PA.

EXPERIENCE has so abundantly proven the wonderful power of resistance possessed by the peritoneal cavity that the opinion formerly held universally, that drainage should be employed in about all abdominal operations, has, during the past few years, been to a great extent abandoned by a great number of operators in this country, though by no means has this advancement been universally accepted by foreign surgeons. Not only is drainage employed whenever infected material is present, but is still regarded by some as essential in benign and non-suppurative intra-abdominal growths.

After a painstaking search of the literature covering the past two years in an endeavor to gain the views of various surgeons throughout the world on the subject of drainage in abdominal surgery, I find there is a striking absence of expression of opinion as to its relative merits. Even in those articles bearing on the subject of operative technic, drainage, when employed, in the majority of cases, is dismissed with the simple statement that it was used.

Of the 41 opinions collected, 21 without exception drain in every operation on the abdominal viscera, while the other 20 do not drain at all or limit its use to those cases where accidental puncture of the viscera has occurred or pus has been free in the abdominal cavity.

Those who restrict the employment of drainage are very much more outspoken in their reasons for so doing than are those who continually employ it. For example: Arthur H. N. Lewers, in the sixth edition of his work on Diseases of Women, says that Keith's tubes for drainage in abdominal cases are no longer to be recommended, and adds that there can be no doubt that in time, not very long past, drainage has been employed in a needlessly large proportion of cases. He further says that it is rarely necessary, but when it is, sterilized gauze drain answers the purpose well.

F. Milner Blumer, in reporting on Chronic Gastric Ulcer, says, that drainage was not employed by him.

G. A. Moynihan says that he rinses the abdominal cavity thoroughly and drains through both wounds when extravisation has taken place from perforated stomach ulcer, but further says that in fresh cases it is sufficient to close without drainage.

Dr. Robert T. Morris, in discussing complications of stomach surgery, says that the presence of gauze very distinctly has a tendency to keep the patient in a condition of shock. He has given up its use entirely, having found, as he says, it to be practically useless in the present day surgery.

Dr. Hunter Robb says that he has not for seven years used a drainage tube, and a gauze drain is used only when there is an adherent pus sac or the structures cannot be removed completely. He further remarks: "I do not feel altogether sure that even under these circumstances the procedure is always absolutely called for."

Dr. John G. Clark has shown in his report of 1,700 abdominal sections that drainage is not only valueless in a great majority of cases in which it has hitherto been used but that it frequently is productive of harm.

On the other hand, among those who persistently employ it, may be mentioned M. G. Roussel, M. R. Sorel of Havre; Cantlic of London; W. Renner of Brussels; Dr. Robert Lichtenstern of Vienna; Hans Lorenz, Dr. Emerick Ullman, H. Feling of Strassburg; Racovicceanu of Roumania; A. Doederling of Tübingen and others.

Most of those just mentioned use it in cases where there are oozing surfaces from broken adhesions and in the absence, according to their reports, of demonstrable infection.

The one hundred cases that I have used to illustrate the technic employed, with the object of lessening the employment of drainage, were in no way selected but were reported in the order that they presented themselves for operative treatment.

Of these there were 36 cases of localized pus, as follows:

16 Appendicitis.
8 Pus tubes.
2 Cholelithiasis with pyemia of the gall bladder.
1 Pericholecystitis.
3 Tuberculous suppuration of the mesenteric glands.
2 Suppurating fibroids of the uterus.
3 Intestinal perforations from typhoid.
1 Perforating duodenal ulcer.

Of these 20 were females and 16 males.

Operated in the absence of pus, there were

22 Appendicitis.
8 Cholelithiasis with sterile gall bladder contents.
14 Fibro-myoma of the uterus.
2 Chronic gastric ulcers.

[8] The stand is sold under the name "Daisy" for $2.50 in the photographic stores.

2. Duodenal ulcers.
3 Carcinoma of the stomach.
1 Carcinoma of the ileum.
7 Extra-uterine pregnancies.
4 Strangulated hernias.
1 Posterior gastro-enterostomy for benign pyloric obstruction.

By the term "localized pus," it is not meant to convey the idea that the quantity of pus was small nor that the abscess was confined to a limited area, by any means. On the contrary, in three of the appendicitis cases the pus pocket occupied one fourth of the lower right abdomen, and in one of the cases of suppurating fibroid of the uterus, the suppurating area extended from the umbilicus to the pubes. In one of the tuberculous suppurating mesenteric glands, a quantity of pus was found free among the coils of the intestines; so that this group of 36 cases of pus in the abdominal cavity would fairly represent the variety of pathologic conditions to be found, and could also, I think, be regarded as belonging to that group of cases where, if drainage were at all to be needed, it would certainly be indicated; while, as a matter of fact, it was employed in but two of the pus cases and these were in one of the appendiceal and suppurating fibroid cases where it was impossible, because of the extensive adhesions, and edema of the walls of the colon and neighboring tissues, to completely wall off the abdominal cavity from the infected area, so that it was feared some of the infected material might have escaped, or was retained within the edematous connective tissue, the drainage being secured in these cases by the employment of the gauze tampons recommended by Mickulicz. In the tuberculous suppurating case, a rubber drainage tube was inserted though removed in forty-eight hours, as there seemed no reason for its being longer retained.

With these two exceptions, drainage was not employed in any of the one hundred cases, and there were four deaths, one of which was the appendicitis case that was drained, another one of the suppurating fibroid cases and two of the typhoid perforations.

The longest period of convalescence was three weeks, most of the cases being sent to their homes by the eighteenth day. There was but one case of hernia, which is a marked contrast to my experience when drainage was employed in just this sort of cases, and where healing took place by the open method.

It is scarcely necessary to say that in the cases of cholelithiasis with pyemia of the gall bladder, that drainage of the gall bladder itself was employed, and it is my opinion should always be employed because of the inability to satisfactorily sterilize the interior of the gall bladder.

Before undertaking an operation we endeavor to acquaint ourselves with not only the condition for which the patient has applied for cure but with the particular temperament of the individual, especially his digestive and eliminative powers, his manner of living, his circulation and his nervous system; in other words, the patient's general resisting powers should be familiar to the surgeon before operation is undertaken. This knowledge can usually be gained in all operations of election.

In the preparation of patients it is not found advisable to keep them fasting too long as the experiments of both Gilbert and Dominici have shown that under such conditions there is a decided increase in bacterial growth. When the patient's resisting power does not seem good it can be decidedly developed by the subcutaneous or intravenous injection of saline solution either immediately before or at the time of operation, the temperature of the operating room being kept as high as 70° F. For operation on the stomach or bowels, the stomach, before operation, is always irrigated.

The employment of the enema shortly before operation on the abdominal cavity has been entirely abandoned in my work because of the objectionable increase in peristalsis caused by it.

TREATMENT OF THE PERITONEUM.

Each layer of the abdominal wall, after the external oblique fascia is reached, is separately divided, between tissue forceps. After the peritoneum is divided it is allowed to go free until the operation is completed.

While this is not the practice that is employed by most surgeons, my own experience has led me to prefer it. I do not recall a single instance where the handling of the viscera through the incision tore it loose from the overlying fascia, a claim that is put forth by some surgeons as justifying its being clamped and brought out on the two sides of the incision, while on the other hand I have, on several occasions, torn it extensively by the use of the peritoneal clamp, and in others have caused damaging trauma.

Nor have I ever regarded the practice of clamping it and bringing it out on the respective sides of the incision, as doing anything toward lessening the escape of blood into the peritoneal cavity, as precaution against this possible occurrence is always taken by ligating each bleeding vessel as the incision is made through the abdominal walls. No clamps, therefore, are ever left in any of the tissues of the incised abdominal wall, including the peritoneum.

Under all circumstances the toilet of the abdominal cavity and viscera is not regarded as completed until the viscera and peritoneum have been normally replaced, as the bunching of any intestines, and especially of the omentum, may conceal infected material.

AFTER THE PERITONEUM IS OPENED.

If the disease is not at once detected by the one or two fingers first employed in the search, the incision is sufficiently enlarged to permit the introduction of the whole hand, which will materially aid in quickly clearing up the condition.

The possibility of mechanical injury to the viscera is always borne in mind as well as the dangers of admission of infection, both of which possibilities can almost to a certainty be avoided by employing an incision large enough to promptly determine the condition which is to be dealt with.

Every effort is taken to avoid loosening the peritoneum from the underlying tissues and if accidentally torn it is at once sutured; and if too extensively torn by the separation of a large area of adhesions, then the surface is completely walled off with gauze until the field of operation is assuredly rendered aseptic.

The greatest gentleness is always employed in cleansing the peritoneal cavity, dry gauze sponges being used for the purpose. No irritating solutions are ever employed in the *general* abdominal cavity because of the certainty that they will gravitate into the numerous pockets and give rise to serious poisoning, or encourage the formation of annoying adhesions. Though for purposes of sterilizing local areas a strong solution is very often employed, never, however, until the neighboring tissues and viscera are thoroughly walled off.

When it is necessary to keep the coils of intestines out of the abdominal cavity, one is far less likely to injure them if, instead of the practice of wrapping them in gauze, they are spread out over the part of the abdomen that is to retain them and then covered with sterile gauze that can be kept at a temperature of not less than 112° by frequent irrigation with hot sterile water, the surface of the abdomen being less likely to cause irritation than the gauze that is employed in which to wrap them.

An additional advantage in this method of dealing with the exposed bowels is that they are not so much in the way of the operator, and impairment of circulation is less likely than when bunched together.

Vessels ever so small are always ligated when any infection is present, as the smallest amount of oozing at the time of operation may greatly increase when the blood pressure rises later.

I avoid separating adhesions that hold together such tissues as the omentum, mesentery and broad ligaments, preferring to remove the entire mass after ligation above and below the points of adhesion, in this way lessening the risk of scattering infective products.

Whenever possible, the laparotomy is carried on extraperitoneally. Unyielding adhesions may prevent this. Then perfect walling off is substituted before any step is taken toward removing the offending condition.

When the field of operation is reached, all vessels are ligated as they are divided and all adhesions in the way are broken up so that the only thing left in the cavity is the gauze which is used for the purpose of walling off the cavity. This does away with the necessity of very often seriously obstructing the field of operation by forceps and clamps, and also removes the danger of leaving instruments in the cavity, the hand of the operator or finger of assistant being given preference as retractors.

The aim is always to bring the pus cavity out through the incision without rupture. When this is not possible, and it more often is not, the pus is evacuated and the pus bearing area is rendered thoroughly aseptic by first washing and mopping and re-washing and re-mopping with sterile water at a temperature of 110°; then a solution of bichloride of mercury, one to five hundred, is carefully applied over the entire pus plane by means of a gauze sponge and long dressing forceps. Thus, unless there is free pus in the peritoneal cavity, it is never wet.

The Trendelenburg position is not employed in any case of localized pelvic abscess, as its employment under such conditions may, if walling off has not been perfect, favor the gravitation of the pus to other parts of the peritoneal cavity, and in that way set up a general pyogenic infection. Indeed, as shown by Schanta, encapsulated pus is quite often sterile, and Hahn and others drain only when the examination of pus at the time of operation shows the presence of streptococci.

Incomplete closure of the abdominal walls is one of the rarest procedures of my practice, only being employed in cases where an accidental puncture of some hollow viscera has permitted the escape of gas and possibly infective bacteria, or where there has been a wound to the liver, spleen or pancreas (in these cases neither ligation nor cauterization can be relied upon to arrest hemorrhage); never with the thought of infection from hemorrhage or pus that may have been left in the abdominal cavity, as the operation is never considered completed until the former is entirely arrested and the latter has beyond doubt been entirely removed.

The encircling binder is dispensed with in many cases where there is an absence of excessive adipose tissue of the abdominal walls. When this condition, or where excessively flabby walls exist, it is employed with the view of avoiding tension on the sutures from the tendency in the latter instance to sag into the loins.

My experience is against the employment of impervious antiseptic dressing, believing that the retention of the body temperature and interference with the proper evaporation from the tissues will more likely encourage bacterial metamorphosis, than the less impervious sterile dressing will permit infection from without.

In large pelvic abscesses where the upper wall is composed partly of agglutinated coils of intestines and plastic exudate, the partial diaphragm so formed is utilized in conjunction with the broad ligaments, the tubes and the abdominal peritoneum to completely wall off the pus-ridden area, and drainage by means of a perforated glass tube is secured through the vault of the vagina, the abdominal wound being closed primarily, as in an instance of this sort where such extensive adhesions of the bowel exist, to undertake to separate the various coils would almost surely render perfect sterilization of the cavity impossible, while, by this means, infection is almost to a certainty guarded against.

Again, rather than employ drainage through the abdominal incision in cases of pus in the lesser peritoneal cavity, I now employ, in those rare doubtful cases, a puncture through the loins and drainage through glass or rubber tube, after the

method of Robson. These procedures, however, are seldom called for, and I have more often regretted their employment than I have found them beneficial.

My experience has over and again demonstrated to me the worthlessness of the gauze drain in any shape or form that I have known it to be used, in about every case except those already mentioned and those where there is partial necrotic tissue that cannot be removed from the abscessed site. In an instance of this sort it is absolutely impossible to sterilize thoroughly and, therefore, the gauze tampons, as recommended by Mickulicz, are rational means of avoiding infection of the neighboring viscera. Its value, however, is but temporary, and its presence as a foreign body not only lessens the power of resistance of the peritoneum but goes far towards keeping up shock, encourages the excessive formation of adhesions, and is the commonest of all causes of about all of the post-operated hernias; and the argument that is used by some, that gauze drainage is useful because nature builds a wall around the infected area, can be logically employed as an argument against its use at all as the fact that nature does shut it out from communication with the general peritoneal cavity shows clearly its utter worthlessness.

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Clinical Department.

A CASE OF TOTAL NECROSIS OF THE MANDIBLE.

BY THOMAS FILLEBROWN, M.D., D.M.D., BOSTON.

THE following is a report of a case of complete necrosis of the inferior maxilla, due to an alveolar abscess arising from the right inferior first molar. Necrosis so extensive is very rare. Some thirty years ago Dr. Wood of New York reported a case, and about twenty-five years since I had a case of phospher necrosis involving the whole lower jaw. The patient refused to have anything done for her and died of sepsis. In respect to causation, extent and favorable result.

I consider the following case quite unique.

The case here described was that of a robust boy, ten years of age, of healthy parentage, with no suspicion of specific taint. In November, 1902, the first lower right molar was extracted for the relief of an abscess. The symptoms did not subside and the swelling and pain continued with increasing severity. Four days after the extraction he was removed to a private hospital where a diagnosis of necrosis was made, and where he remained fourteen weeks under treatment. The extent of the necrosis was not determined at this time.

The case came under my care in May, 1903. There was marked swelling of the neck and lower portion of the face, the edema being diffuse and symmetrical. As far back as the rami the bone of the lower jaw was entirely denuded. A portion in the mental region and part of the alveolar process had already been destroyed by liquefaction. All indications pointed to the involvement of both rami.

As the patient's general condition was good and there being no indication of septic absorption, I thought it best to allow the case to continue for a period without interference, in order that the sequestrum might be more completely separated, and a more substantial involucrum be formed.

On June 2, several weeks later, I decided that the case was ready for an operation which I performed at the private hospital of Dr. Tuttle, Cambridge, Mass. There was no change in the external appearances; the skin of the face was tense and edema very extensive about the face and neck. Within the mouth the entire mandible was denuded and the process had extended considerably up on the rami. Anteriorly, the mental portion had completely separated as far as the foramina on either side.

Anesthesia was maintained with my apparatus especially designed for oral operations, by the use of which the frequent interruptions necessary in the usual method of anesthetizing were avoided. The operation was performed with periosteum dissectors and no sharp instruments were used.



FIG. 1.

The lateral halves of the mandibles were removed separately, attention first being given to the larger right portion. By careful manipulations and use of the dissector the separation of the sequestrum was accomplished by beginning anteriorly and working cautiously backward and ascending the ramus. In this manner fully one half of the body of the ramus with the sigmoid notch and coronoid process, together with the neck of the condyle, were removed, leaving but a shell of the latter *in situ*. The left half was then removed in the same manner and found to be equally large excepting for the absence of portions completely destroyed. (Fig. 1 shows the jaw with the fragments

supported in place.) It required twenty-five minutes to complete the operation. The hemorrhage was insignificant.

A firm involucrum had formed with a healthy granulating surface and the sequestration had been so perfect that not a particle of bone could be felt throughout its extent. Irrigations with aseptic solutions constituted in the main the after treatment. The temperature



FIG. 2.

reached 100° F. on the second day and fell to normal on the fourth when the patient was removed to his home. The edema diminished steadily and the case progressed to complete recovery in a short time, with no deformity of the face. (Figs. 2 and 3 are from photographs of the patient taken a few weeks after the operation.)



FIG. 3.

Whether the under jaw will continue to grow and preserve the proportion and symmetry of the face is an interesting question for the answer to which we must wait.

CHINESE SAILORS HAVE BERI-BERI. — Eight out of the fifty-six Chinamen composing the crew of the British steamer "Knight of St. George," now at Philadelphia discharging a cargo of sugar from Java, were taken to the Marine Hospital, at the State Quarantine Station at Marcus Hook, suffering from beri-beri.—*American Medicine.*

Medical Progress.

REPORT ON PROGRESS OF SURGERY.

BY HERBERT L. BURRELL, M.D., AND H. W. CUSHING, M.D., BOSTON.

(Concluded from No. 19, p. 529.)

GASTRO-ENTEROSTOMY AND PYLOROPLASTY.

CANNON and Blake:[12] This article is an experimental study, by means of the Röntgen ray, of the effect of gastro-enterostomy or pyloroplasty on animals. The summary of the paper which we give indicates the scope of the observations. An excellent bibliography is appended.

"Summary: The stomach is not a passive bag. During digestion the cardiac end slowly contracts, pressing its contents into the pyloric end. Over the pyloric end during digestion peristaltic waves are continually running, churning the food with the gastric juices and forcing the chyme into the intestine. Observations on the functioning human stomach show that as it empties it shortens, especially along the greater curvature. Therefore the part of the stomach lowest when the organ is full or relaxed is not lowest as it empties. The pylorus then becomes the lowest point. Even if 'gravity drainage' occurred, the pylorus is the natural outlet so long as the stomach retains its power of contracting.

"The pressure within the abdomen is approximately atmospheric pressure. The pressure in any part of the passive alimentary canal depends In the weight of the overlying abdominal organs. if the canal is inactive, the food therefore is as if surrounded by water. Gravity cannot act, and gravity drainage does not occur.

"After an ordinary meal, the peristalsis of the pyloric end of the stomach makes the contents of this part more fluid than the contents of the cardiac end. Because peristaltic waves move towards the pylorus, the intragastric pressure is three or four times greater at the pylorus than in the cardiac end. Observations on large cats with gastro-enterostomy openings of various sizes at various parts of the stomach showed that unless the opening, or stoma, was in the antrum (*i. e.*, close to the pylorus) the food, even when fluid, was pushed through the pylorus rather than through the stoma.

"With peristalsis only in the pyloric end of the stomach, with the intra-gastric pressure much greater at the pylorus than elsewhere in the stomach, and with the food in the pyloric end normally more fluid than that in the cardiac end, the food is forced into the intestine through the pylorus and not through the artifical opening, when both ways are offered.

"Circulation of the food through the pylorus to the duodenum and back to the stomach through the anastomosis has been repeatedly observed, but it was not followed by the clinical symptoms of the 'vicious circle.' The circulation was observed best when the stomach was very full. The stretching of the stomach separates the lips of the stoma and draws the intestinal wall into line with the gastric wall. The openings into

[12] Annals of Surgery, May, 1905, p. 686.

the intestine at the stoma then become mere slits, and act like valves, permitting the entrance, but preventing the exit, of the food.

"The clinical symptoms of the 'vicious circle' have been observed in animals in which a kink of the intestine has been found just distal to the anastomosis. Kinks at this point cannot be straightened by peristaltic activity, because the circular fibers of the intestine are cut at the nearby stoma.

"It is important that food be mixed with the secretions poured into the duodenum; these juices are highly effective in digestion, and also neutralize the acid chyme. If food leaves the stomach by the stoma, it is not mixed with these secretions. Jejunal ulcers after gastro-enterostomy may be due to the presence of acid in a region in which inorganic acid is not normally found.

"From the above considerations, it was concluded that the stoma should be large and as near to the pylorus as possible; that the circulation of the food be rendered less probable by avoidance of overeating, and that so far as possible kinks be obviated, by attaching a narrow band of the distal gut to the stomach for several centimeters beyond the stoma, thus permitting peristalsis to become an effective force.

"The probability of a circulation of the food whenever the pylorus is left open, the non-mixture of the food with the digestive and neutralizing fluids in the duodenum, and the ever-present danger from kinks in gastro-enterostomy make the operation not an ideal one.

"In pyloroplasty (preferably the Finney operation) these objections are avoided. And a too rapid exit of the food through the pylorus is prevented by rhythmic segmentation of the food in the duodenum, an activity which in part replaces the functions of the pylorus, and also mixes the food with the pancreatic juice and the bile."

RUPTURE OF THE TENDON OF THE BICEPS FLEXOR CUBITI.

Keen [16] has reported two cases in which an operation was done for repair of this injury. Few operations have been done for this injury, and this article records the operative cases, the necessity for operating, and the details of the operation.

A TREATMENT OF FRACTURE OF THE NECK OF THE FEMUR DESIGNED TO IMPROVE FUNCTIONAL RESULTS BY IMMEDIATE REDUCTION OF DEFORMITY AND BY EFFECTIVE PROTECTION DURING THE PERIOD OF REPAIR.

Royal Whitman [17] has contributed another paper on this important and rather neglected fracture. He suggests that this injury would be far less disastrous in its results if the following conclusions were generally accepted:

1. Fracture of the neck of the femur occurs at any age, even in childhood.

2. An injury at the hip, followed by persistent disability, should always suggest fracture, and if one is not expert in the details of physical examination, an x-ray picture should be procured if possible.

3. As an impacted fracture must of itself cause disability, one should attempt to reduce it in the manner that has been described, provided efficient support can be assured.

4. The first essentials in the treatment of complete fracture is to appose the fragments. For this purpose, direct traction under anesthesia followed by fixation in the attitude of abduction seems to present certain advantages over the methods ordinarily employed.

5. If union has not followed routine treatment, the open operation is indicated in suitable cases.

6. Support and protection by properly adjusted apparatus is of great advantage during the period of repair, and in any event weight-bearing should not be permitted until the symptoms indicate that the consolidation is complete.

7. The distinction between the two forms of fracture that occur in young subjects is of importance as influencing treatment.

8. It seems probable that in the majority of cases treatment may be applied, tentatively at least, with advantage. The standard of success in treatment of the most favorable cases should be restoration of normal function, and in all one should at least attempt to apply the principles that are recognized as essential to success in the treatment of fractures in other situations.

SURGICAL INTERVENTION FOR INTRACRANIAL HEMORRHAGES IN THE NEWBORN.

Harvey Cushing [18] has presented two interesting papers on this subject. He considers that "the indications for immediate surgical intervention are as definite in many of these cases as they are when corresponding symptoms are unmistakably the result of a traumatic intracranial hemorrhage occurring in adult life." Dr. Cushing has operated in a number of cases and has obtained satisfactory results. He states: "If it can be demonstrated that a craniotomy on the newborn child, when conducted with due precaution and delicacy of manipulation, is comparatively free from danger, I believe the immediate risk of death and the sorry late consequences of meningeal birth hemorrhages may be avoided in many cases by surgical interference. It is reasonable also to suppose that these explorations will at the same time lead us to a better understanding of the varying pathological features of this group of diseases in their early stages."

A STUDY OF BRACHIAL BIRTH PALSY.

Clark, Taylor and Prout [19] have made an interesting study of this subject and their paper records certain cases that were operated upon and is a fairly complete consideration of the subject. They arrive at the following conclusions:

[16] Annals of Surgery, May, 1905, p. 756.
[17] American Journal of the Medical Sciences, July, 1905, p. 1.
[18] The Special Field of Neurological Surgery, Johns Hopkins Bulletin, April, 1905. American Journal of the Medical Sciences, October, 1905, p. 563.
[19] American Journal of the Medical Sciences, October, 1905, p. 670.

This research embodies new facts in the etiology and pathology of the laceration type of birth palsy, the development of the relationship thereto of the symptomatology, and the establishment of a scientific basis for treatment.

1. The cause of the laceration type of birth palsy is tension on the nerve trunks, which first ruptures the nerve sheath and then the nerve fibers. The prevention of this serious lesion of the cervical nerve trunks rests with the obstetrician, who should not overstretch the child's neck in the process of delivery.

2. The persistence of the palsy is clearly explained by the pathological findings, viz.:

(*a*) Rupture of the perineural sheath with hemorrhage into its substance, resulting in the formation of hematomata or hematomatous infiltration into the neighboring tissues.

(*b*) The cicatricial contraction following organization of the blood clot and repair of the rent in the perineural sheath. The connective tissue thus formed indents and presses upon the nerve bundles, strangulating them and preventing regeneration of the nerve fibers. In some instances the same result is accomplished by the turning inward of the perineural sheath upon the nerve bundles.

3. The nature of the lesion in all cases demands excision of the damaged areas and suture of the divided ends as soon as it is proven that spontaneous repair will not take place. The plan of treatment is then the same as that for peripheral nerve injuries elsewhere.

4. In all cases such treatment as will prevent contractures and deformities and maintain muscle tone in the paralyzed limb should be systematically used until either spontaneous recovery occurs or operation is done. (Traumatic neuritis is a contra-indication to active treatment.) It is obvious that the above measures should be continued after operation.

5. The proper time for surgical interference is not yet definitely fixed. It appears, however, to be much later than two or three months after birth, as advised in Kennedy's report. At the present time one year would seem to be a reasonable delay before operation.

6. Sufficient time has not elapsed in the majority of cases in this series for final results to have appeared.

THE DIAGNOSIS AND TREATMENT OF FRACTURE OF THE CARPAL SCAPHOID AND DISLOCATION OF THE SEMILUNAR BONE.

E. A. Codman and H. M. Chase[20] in this article make a study of thirty cases of this fracture. The conclusions of the authors are interesting and valuable and are as follows:

"It has been the intention of the authors in this paper to draw the attention of surgeons to more systematic observation, and to more exact methods of diagnosis and treatment of carpal injuries than is shown to exist by the present literature of the subject. We realize that in individual instances many of the authors whose opinions or whose cases we have quoted have been able to interpret and successfully treat similar cases to those which we publish, but from our own observations and experience we know that many other such cases are not understood, and hence are not successfully treated. Undoubtedly such cases here and there have been recognized and properly handled, especially since the x-ray has been in general use, but we believe that the profession at large does not realize that many obstinate sprained wrists are instances of fracture or dislocation of the carpal bones, and that the treatment of such injuries should be known as definitely as those of fracture or dislocation of any other joint. . . . We feel that the results obtained in our six operated cases justify our recommending a somewhat radical treatment, because the cases which have been treated conservatively have neither recovered so quickly nor so completely as those on which we have operated. Nevertheless, we realize that it is a delicate question to decide whether the risk of sepsis would overbalance the prospect of gain in functional usefulness.

"We desire to summarize the important points in our paper as follows:

"1. 'Sprains' of the wrist which do not promptly recover are in many cases fractures or dislocations of the carpal bones.

"2. The large majority of such carpal injuries are either simple fractures of the scaphoid or anterior dislocations of the semilunar bone.

"3. These two injuries are frequently combined, and in such cases the proximal fragment of the scaphoid is usually dislocated forward with the semilunar.

"4. Simple fracture of the scaphoid gives a definite clinical picture, and may be recognized even without the x-ray by the association of the following symptoms, viz.: (*a*) The history of a fall on the extended hand; (*b*) localized swelling in the radial half of the wrist-joint; (*c*) acute tenderness in the anatomical snuff-box when the hand is adducted; (*d*) limitation of extension by muscular spasm, the overcoming of which by force causes unbearable pain.

"5. A broken scaphoid has little power of repair and appears capable of but slight callous formation.

"6. Fractures of the scaphoid which remain untreated or are treated by massage and active and passive motion, generally, if not always, remain ununited, and the original symptoms often persist for years with only slightly abated intensity.

"7. Cases of fracture of the scaphoid may unite if motion of the wrist is prevented during the first four weeks after the injury, but if by this time no union has occurred, future union is unlikely.

"8. Excision of the proximal half of a fractured scaphoid gives a somewhat better result than conservative treatment.

"9. A posterior incision to the outer side of the tendons of the extensor communis digitorum gives an easy and safe access to the proximal half of the scaphoid.

[20] Annals of Surgery, March, 1905, p. 321, and June, 1905, p. 863.

"10. Passive motion of the wrist-joint and active motion of the fingers should be begun within a week after this operation.

"11. The possibility of the existence of a bipartite scaphoid should be considered in interpreting x-rays of simple fracture of the scaphoid, but its occurrence must be very rare in comparison with fracture.

"12. Anterior dislocation of the semilunar bone should be recognized clinically, even without the x-ray, by the association of the following symptoms, viz.: (*a*) The history of an injury of considerable violence to the extended or twisted wrist; (*b*) a silver-fork deformity, the posterior prominence of which corresponds with the head of the os magnum, and between which and the lower end of the radius is found a groove representing the position formerly occupied by the anteriorly dislocated semilunar; (*c*) a tumor under the flexor tendons of the wrist just anterior to the lower end of the radius; (*d*) a shortened appearance of the palm as compared to the other hand; (*e*) stiffness of the partially flexed fingers, motion of which, either active or passive, is painful; (*f*) the persistence of the normal relation of the styloid processes of the ulna and radius and the existence of shortening of the distance from the radial styloid to the base of the first metacarpal.

"13. Recent dislocations of the semilunar may be reduced with good results even after the fifth week by hyperextension followed by hyperflexion over the thumbs of an assistant held firmly in the flexure of the wrist on the semilunar.

"14. Irreducible dislocations demand excision of the semilunar and the whole or a portion of the scaphoid if there is a coincident fracture of the latter."

SUBDIAPHRAGMATIC TRANSPERITONEAL MASSAGE OF THE HEART AS A MEANS OF RESUSCITATION.

H. M. W. Gray[21] records an extremely interesting case. A patient who had marked laryngeal obstruction made a journey to the hospital. The dyspnea increased and when seen by Dr. Gray in the ward the patient was said to be dying. He states:

"At 12.53 I was told that the patient was dying. On the way to the women's ward a nurse met me saying that she was dead. On entering the ward I heard her make a feeble choky inspiratory effort. Her face was very deeply cyanosed, the large veins standing out on her face and neck. This, however, disappeared with striking rapidity. High tracheotomy was performed at once with a penknife and the lips of the tracheal wound were retracted with bent hairpins. Very little bleeding occurred from a small vein at the lower end of the wound in the neck. Artificial respiration was immediately proceeded with but only four or five spontaneous breaths were taken by the patient. There was no pulse at the wrist or cardiac impulse from the first. No cardiac sounds could be heard on auscultation. She was pallid, all reflexes had disappeared, the pupils were widely dilated, the muscles became absolutely flaccid, her lips were pale, and her eyes rapidly assumed a 'glassy' look. Various methods of resuscitation, including attempted external massage of the heart, were carried out but all to no purpose.

"Four or five minutes after the tracheotomy was done the abdomen was opened in the middle line immediately under the xiphoid cartilage, again with my penknife. There was no bleeding. Inserting two fingers I could easily palpate the outline of the heart between the diaphragm and the ribs in front. It was absolutely flaccid. Massage by intermittent pressure was carried out for about four minutes. The compressions were performed about the rate of 70 to 90 per minute. At the end of every fifteen to thirty seconds I abated the movements in order to feel any change in the condition of the heart. At the end of the above period I felt the heart becoming firm gradually. After remaining thus for a few seconds a slight tremor was felt. Then very slowly (from 30 to 40 to the minute) the heart began to beat. The pulsations were at first very feeble. I massaged the heart for a few seconds more and then it beat gradually more strongly and quickly until at seven minutes past one it was beating at the rate of about 90, and more vigorously than since admission. The gradual return of the heart's action was indicated to those around by keeping time with my left hand, the other being used for massage. The color was observed to return to the face and lips, the eyes lost their 'glassy' stare, the pupils contracted, and pulsation of the carotids became very visible. During all this time artificial respiration had been kept up by compressing the chest. Very soon after the heart began to beat the patient took a rather deep spontaneous breath and from ten to fifteen seconds later another, till by degrees respiration became normal though somewhat frequent. Slight hemorrhage occurred from the abdominal wound which was then partially sutured and a gauze drain was inserted under the diaphragm. When I left the hospital an hour later the pulse was rather weaker and quicker but still wonderfully good, so that I was rather surprised to hear from the house surgeon that the patient died at 3 P.M., having never regained consciousness. The cause of the laryngeal obstruction was found to be a fairly large cancerous growth. Probably at least ten minutes elapsed between the times when the heart stopped beating and when it began again."

Dr. Gray reports a similar, though not so striking, experience in another case.

THE PERMEABILITY TO BACTERIA OF SURGEONS' RUBBER GLOVES.

Fox and Schumann[22] question the absence of permeability of rubber gloves. They selected six pairs of gloves of standard make and subjected them to experiments. They state that "the results of these experiments were such as to justify the writers in arriving at the conclusion that

[21] The Lancet, Aug. 19, 1905, p. 506.

[22] The American Journal of the Medical Sciences, October, 1905, p. 656.

rubber gloves are absolute barriers against wound infection by the hands of the surgeon, in so far that they are absolutely bacteria proof. Any infection occurring must be introduced into the wound from some point not protected by a glove."

FINAL RESULTS OF THE X-RAY TREATMENT OF CANCER, INCLUDING SARCOMA.

William B. Coley[23] in this article reports the results of his endeavors during the past three years to determine the value of the x-ray in the treatment of malignant tumors. During this time there have been treated, more or less under the supervision of Dr. Coley, 167 cases of malignant tumors, sarcoma and carcinoma.

"In five of the 68 cases of sarcoma complete disappearance was observed, but in every one of these cases there was a recurrence a few months later. In two of these cases the recurrent growths disappeared again under the combined x-ray and toxin treatment. These two cases are still well at present. Of the other cases one died of internal metastases; one, a sarcoma of the pectoral region and axilla, was a local recurrence; the fifth case, a sarcoma of the chest wall involving the ribs and pleura, disappeared under the combined treatment with the x-rays and toxins, the x-rays having never been used alone. In this case there has recently been a recurrence which thus far has not yielded to further treatment with the x-rays or toxins.

"In one case, a very rapidly growing sarcoma of the orbit with extensive involvement of the lymphatic glands of the neck, very marked improvement followed the use of the x-rays, the glands of the neck nearly disappearing under a few weeks' treatment and the tumor of the orbit also diminishing in size. The improvement, however, was of very brief duration; the tumor soon began to increase again rapidly and caused death in a few months.

"The x-rays were used in three cases of melanotic sarcoma, starting in the skin of the ankle in two cases, and involving the femoral and iliac glands. In one case the x-rays were used for nearly two years, and seemed to have a decided influence in retarding the progress of the disease; in the other two, which were of much more rapid growth, the effect was apparently *nil*.

"After having given the x-ray a very careful trial in sixty-eight cases of sarcoma in almost every locality, I am forced to the conclusion that, while in certain rare cases, especially of sarcoma originating in the lymphatic glands, improvement may be very striking, going so far, in some cases, as to cause entire disappearance, there is almost always a speedy recurrence, either local or metastatic, and that the influence of the x-rays upon sarcoma is rarely if ever, curative."

Dr. Coley's conclusions are as follows:

"The results of the x-ray treatment of malignant tumors up to the present time have proven:

"1. That the x-ray exerts a powerful influence upon cancer cells of all varieties, but most marked in cases of cutaneous cancer.

"2. In some cases, chiefly in superficial epithelioma, the entire tumor may disappear, probably by reason of fatty degeneration of the tumor cells with subsequent absorption.

"3. In a much smaller number of cases of deep-seated tumors, chiefly cancer of the breast and glandular sarcoma, tumors have disappeared under prolonged x-ray treatment. In nearly every one of these cases, however, that has been carefully traced to final result, there has been a local or general return of the disease within a few months to two years.

"4. In view of this practically constant tendency to early recurrence, furthermore, in the absence of any reported cases well beyond three years, the method should never be used except in inoperable cases, or as a prophylactic after operation, as a possible, though not yet proven, means of avoiding recurrence.

"5. The use of the x-ray as a pre-operative measure in other than cutaneous cancer is contra-indicated: (1) because the agent has not yet been proven to be curative; (2) because of serious risks of an extension of the disease to inaccessible glands or to other regions by metastases during the period required for a trial of the x-ray."

SOME REMARKS ON CASES INVOLVING OPERATIVE LOSS OF CONTINUITY OF THE COMMON BILE DUCT.

William J. Mayo[24] states that of 1,100 operations on the gall bladder and bile passages, in seven instances there has occurred a complete loss of continuity in the common bile duct as a direct result of the operation, five were intentionally produced in the attempt to remove a malignant neoplasm, one was accidentally caused, and one followed an extensive operation for gallstone disease. Dr. Mayo briefly reviews the features of these cases and summarizes his experience as follows:

"*First*, the common duct may be united end to end, by through-and-through catgut sutures. It is essential that a few supporting sutures should be placed in the surrounding tissues, and that a portion of the circumference of the line of union be left open for relief of tension and drainage. *Second*, the common, and in certain cases the hepatic, duct may be implanted into the duodenum, provided a peritoneal covered portion of the intestine be chosen for the purpose. *Third*, to facilitate these operations, the second portion of the duodenum should be loosened and drawn to the right and held by fixation sutures, preventing tension on the duct suture line. *Fourth*, drainage, if necessary, should be pliable, covered with rubber tissue, and placed as distant to the suture line as will serve the purpose of protection against leakage." He records a case in which careful attention to these details gave a successful result. The article is illustrated.

PRESENTATION TO DR. HEMMETER.— On Nov. 15, the twentieth anniversary of his doctorate, an oil portrait of himself was presented to Dr. John C. Hemmeter by his friends.—*Journal, American Medical Association.*

[23] Annals of Surgery, August, 1905, p. 161.

[24] *Ibid.*, July, 1905, p. 90.

Reports of Societies.

SEVENTH CONFERENCE OF THE ASSOCIATION OF HOSPITAL SUPERINTENDENTS.

Tuesday, Sept. 26 — Morning Session.

At the opening session of the Seventh Conference of Hospital Superintendents, held in Hotel Vendome, Sept. 26th to the 29th, Dr. George H. M. Rowe of the Boston City Hospital, President of the Convention, presided. The conference was opened by prayer by the Rev. Edward Everett Hale, D.D. Dr. David W. Cheever delivered an address of welcome, to which Dr. Henry M. Hurd of the Johns Hopkins Hospital, Baltimore, responded. Dr. George H. M. Rowe gave an address in which he briefly reviewed the history of the association whose principle was co-operative, democratic and beneficial.

Under the title of

THE HOSPITAL WORLD,

Sir Henry C. Burdett, K.C.B., of London, England, made an appeal for the better financial management of hospitals. Sir Henry said in brief: "The control of hospitals by trustees and superintendents should be absolute, and each of the honorary medical staff should be paid for every time he visits the hospital. The effect of this arrangement would give each member of the staff the footing of every other member. There is a danger of course, that the hospital under this régime might become political, but this could probably be avoided. All that is needed is to awaken the medical men to think of, to look at and to consider the great cost of treatment; then they will gladly conform to the economies suggested by the trustees and the superintendent. The poor must be the first consideration, all the others must pay adequately. While the superintendent looks to the financial standing of the hospital, the doctors must co-operate with him. The accounts of each department should be kept separately, so the working of the hospital can be seen and the donors may know definitely to what use the money they have so generously given has been put."

At the conclusion of the meeting, Dr. J. O. Skinner of the Columbia Hospital, Washington, D. C., was made a member of the auditing committee.

Afternoon Session.

Tuesday afternoon was devoted to the discussion of the construction and arrangement of hospitals.

Mr. Edmund M. Wheelright, architect, of Boston, spoke on hospital operating-rooms and their accessories.

THE STANDARDIZING OF HOSPITAL CONSTRUCTION AND EQUIPMENT

was the subject of a paper by Mr. Bertrand E. Taylor, architect, of Boston.

Mr. Wheelright maintained that the hospital superintendent and architect should work together for one common aim, namely, the future usefulness of the building they are planning for their hospital. As for material, marble is preferable to cement because it does not need to be renewed, the walls should be of hard plaster, all wood work excluded. The hospital demands no purely decorative system and everything should have the virtue of cleanliness.

Mr. Taylor said that the problem of hospital-building is primarily one of finances, which the great increase of cost of material tends to increase. The financial status of the hospital has not been given the attention it deserves, for numerous reasons.

First, competition in that line has been lacking.

Second, few hospitals are built all at once.

Third, hospital trustees are seldom of sufficient experience.

Fourth, in large hospitals the superintendent is usually capable, but in small ones he is not usually a man of varied or practical experience.

Fifth, the architect is not efficient.

Hospitals, like Topsy, are not born but grow, and as there is great difference of opinion in their construction it is almost impossible to fix uniform standards. There is an evolution in favor of small wards and single rooms, also the hospital should be more like sanatoria in giving light and fresh air to patients. I would like your opinion in regard to the sun as a disinfectant in the operating room, while the room is not in use. The hospital should have unit furniture and accessories as a precaution against dust.

In the discussion which followed these speeches, it was generally agreed that, owing to the different aims of the hospital, as well as to the different sums that could be expended on them, the standardizing of hospitals was impossible. Dr. Renwick R. Ross of the Buffalo General Hospital of Buffalo, New York, Dr. Henry M. Hurd of Baltimore, Sir Henry C. Burdett of England, Dr. C. Irving Fisher of New York and Dr. S. F. Armstrong of New York took part in the discussion. The pavilion plan of hospital was generally favored, also the balconies to be built around the walls, the floor of the balconies to be on a level with the floor of the ward, so that patients could be easily rolled out. The various questions of large and small, open and closed wards, heating, ventilating and arrangement, were freely discussed, and there were as many different ideas on those subjects as there were people to express them. Dr. Burdett gave the essentials of a hospital as absolute simplicity and cleanliness. His advice was to get back to Adam and to nature and get real efficiency on the simple and cheap lines. The necessity for closets for the patients' clothes, isolated rooms for very noisy or very sick patients, the advantage of large wards in the better care of the patients and better supervision of nurses, was demonstrated in a convincing talk by Miss Maud Banfield of the Philadelphia Polyclinic. Dr. John M. Peters of the Rhode Island Hospital, Providence, stated, as his opinion, that no board of hospital administration was complete without a woman of continuous practical experience as a member of that board.

At the close of the discussion, Dr. Rowe read the following committees:

Committee on Nominations: Dr. C. Irving Fisher, New York City; Mr. Daniel D. Test, Philadelphia; Dr. J. O. Skinner, Washington.

Committee to consider a place for the next annual meeting: Dr. C. I. Fisher, New York; Dr. J. O. Skinner, Washington; Mr. D. D. Test, Philadelphia; Dr. R. R. Ross, Buffalo; Rev. George C. Hunting, Salt Lake City.

Wednesday, Sept. 27 — Morning Session.

The Wednesday morning session was opened by a paper on

HOSPITAL ADMINISTRATION,

delivered by Mr. George P. Ludlam, Chairman of the Session.

TO WHAT EXTENT HAS THE INCREASED COST IN HOSPITAL CONSTRUCTION AND EQUIPMENT BEEN JUSTIFIED?

was the subject treated by Dr. S. S. Goldwater and Dr. Thomas Howell.

Dr. Moses Collins talked on

AN AID IN THE PERFECTING OF HOSPITAL MANAGEMENT.

He maintained that expensive hospitals are not necessary to good results, since contact, not surroundings, is a basis of all good surgery. Simple surroundings would result in economy of supplies by surgeons.

The discussion of these papers was led by DR. HERBERT B. HOWARD and DR. WILLIAM O. MANN. Dr. Howard proved conclusively the advantage of a convalescent home. Under the head of deficits he said that the large ones were due to the fact that the superintendent had no definite opposing wall of conditions which could say, "Thus far shalt thou go and no farther." That a medical school in connection with a hospital is expensive, he did not deny. The superintendent should see that the students do not waste material, since such methods destroy the reputation of the hospital and give the students careless habits. He does not decry expensive buildings, if the building committee has the money to spend, but that money must be spent to attain perfection and not elegance. Certain kinds of experimentation are permissible, for instance, anything that has to do with the operating table and its equipment, for in that line the hospital has its own problems to solve. But as for engineering and electrical experiments anything in that direction should be left to mechanics and engineers.

Sir Henry C. Burdett advocated the convalescent home strongly. He said he had found, as he presumed had been the case with all his colleagues, that the atmosphere of a hospital ward was not good for patients when they are recovering, but that these same patients showed a rapid increase of vigor when sent to the country. There is also in favor of the home the condemnation of science against treating surgical cases in crowded districts. The time will come when the hospital system will be outside the town where people reside. He suggested that the deficit trouble be met by an organization here similar to that which exists in England under the name of "The League of Mercy." In England the town or the city is divided into districts over which is placed one man and one woman as presidents of each district. Each has thirty vice-presidents, and each vice-president has twenty members under his or her control. All these people give a certain definite sum yearly to the hospitals and in this way the deficit is overcome. The keynote of the league is that the only true and unselfish way of giving, is to give of one's self. Therefore, the League is filled with members who, with health, wealth and love of humanity, work for those who are less fortunate than themselves.

At the close of the session Sir Henry C. Burdett was unanimously elected an honorary member of the association.

EVENING SESSION.

The meeting on Wednesday night was held at the Boston Medical Library, in the Fenway.

DR. HENRY M. HURD read a paper on

JOHN HOWARD'S OBSERVATIONS ON HOSPITALS, 1773–1790,

in which he showed that the medical profession was, even at that early date, well acquainted with the contagiousness of tuberculosis. In the discussion which followed Sir Henry Burdett delivered an eloquent protest against the fear of consumption being carried to such an extent as to result in inhuman acts of cruelty to those afflicted with this disease. Sir Henry said in brief: "I rest my reputation as a professional man on the statement I now make that there is no such contagiousness about tuberculosis as should render it necessary for any of the wretched and contemptible panic to possess families. For we know perfectly well that with ordinary precautions and with the intelligent co-operation of the patient, steps may be taken that will render the disease, for all purposes of domestic treatment, reasonably safe.

"It ought, therefore, to be possible for a family to keep its dear ones near to it, and take care of them, when afflicted with this disease; and not treat them as objects of horror to be thrust away.

"While I advocate and support the fullest measures of prevention and disinfection, I also urge that we must be rational, and that in considering phthisis as an infectious disease, we are not to teach that it must be isolated on a hill, as near the sky as possible. I believe that many poor people have already been done to death by their friends because of this panic fear of consumption."

In supporting the view just expressed, Dr. Hurd said: "I have no doubt that the patient who in instructed as to the danger to others, who is fully aware that people sympathize with him and are not afraid of him, will be less a source of danger than the neglected consumptive who is not thus instructed, who has not the sympathy of his friends, and who feels that he is an object of suspicion.

"In talking with nurses I have found that a certain percentage of consumptive patients are embittered by this prejudice against the disease, and being embittered, get reckless as to whether they scatter the disease or not. Their attitude is due to the lack of sympathy shown by persons associated with them. If these patients are approached by kind, sympathetic friends, and are both instructed and sympathized with, they may be made a most efficient aid in preventing the spread of tuberculosis."

DR. GEORGE H. M. ROWE, President of the Conference, then announced the recent sudden death of Dr. J. R. Chadwick, the founder of the Boston Medical Library, who had been expected to deliver a paper under the title of

MEDICAL LIBRARIES IN HOSPITALS.

Dr. Rowe gave a short sketch of the life of Dr. Chadwick, concluding with an admiring tribute to the man whose energy and perseverance had built up such a much-needed institution as the Boston Medical Library.

DR. EDWARD H. BRIGHAM, Dr. Chadwick's assistant, read a paper prepared by his former chief on the

FOUNDING AND DESCRIPTION OF THE LIBRARY.

SOME DETAILS ABOUT LIBRARIES IN HOSPITALS

was the subject of an interesting paper by MRS. GRACE WHITING MYERS. She maintained that a medical library is a necessity in a hospital. It is ready for emergencies, for study and for rest, for meetings and discussions. There are few real working libraries, for the need for them is not realized. In the management, she recommended the most simple method of cataloguing and much bulletin work, and maintained that to the librarian belongs the success of the medical library.

Dr. Hurd opened the discussion of this paper with the remark that he thought the necessity for a library in the hospital is self-evident, and he also recommended a large library for nurses, since the wider the horizon of a nurse, the better her grasp of her profession. Sir Henry added that to do positive work it is essential to consort with books. There in the biographies of the world one finds consummation and the strength to go forward. Never deprive or divorce us from the companionship of books. Sir Henry represents the hospital in journalism and he wants to join hands with America. "The field," he says, "is large enough if we co-operate to make a journal and a year book of permanent interest. It is not a matter of finance, but of co-operation."

THURSDAY, SEPT. 28 — MORNING SESSION.

DR. G. H. M. ROWE opened the session by announcing that Dr. Ochsner, Surgeon-in-chief of Augustana Hospital and St. Mary's Hospital of Chicago, who

could not be present at the time assigned for his paper, had arrived, and would now read that paper. Dr. Ochsner's subject was

MULTIPLE-STORIED BUILDINGS FOR HOSPITALS IN CITIES.

It is his opinion that for cities like Boston, New York and Chicago, and large cities generally, the many-storied plan is best. He gave the requisites for an ideal hospital as:

(1) Sunlight in every room or ward of the building.
(2) Proper heating.
(3) Proper conditions for ventilating.
(4) Safe disposition of sewage.
(5) Absence of noise in the hospital.

To these may be added:

(6) Safety from fire.
(7) Relative isolation of patients when desired.
(8) Possibility of increase in the future.

He looks upon the question of economy as of great importance, since money spent in the actual construction of the building is the least part of the expense. The conduct of the hospital is the expensive side; therefore the hospital structure itself must be built to lessen these running expenses as much as possible. In the multiple-storied buildings, just as in a low structure, much of the ventilation must come through open doors and windows; therefore a building standing in an open space has a better circulation than a number of small buildings standing close together in that same space. There is also advantage to be obtained from getting away from the earth; therefore the multiple-storied building has the advantage of ventilation and sunlight over the pavilion style. More than one half the buildings on the cottage plan are contaminated with street dust, while in the higher stories of the tall building this is not the case. Artificial ventilation by fans can be accomplished as readily in the multiple-storied building as the pavilion style. The heating should be supplied by direct radiation, both because it is more hygienic and less expensive than indirect. The absence of noise in the hospital is important and the amount of street noise which will reach patients on the sixth story is much less than on the first or second. In a hospital where the recovery rooms are on the top floor and also the operating rooms one secures all the requisite facilities and at the same time has the advantage of avoiding dust and noise. Dr. Ochsner proved conclusively that in a ten-story building one could obtain the same facilities at one half the cost of construction of a hospital of the same number of beds constructed on the pavilion plan. Relative to a home for nurses he recommended that in the young days of the hospital they be housed on one floor of the main building, but that ultimately they have a separate house, since it was better for their health and they could render better service.

Under the general topic of

HOSPITAL ENGINEERING PROBLEMS

Dr. Renwick R. Ross, Chairman of the Session, Dr. John H. McCollom, Dr. F. A. Washburn and Mr. Jeremiah C. Long, each read papers.

Dr. Ross's subject was

COLD STORAGE AND REFRIGERATION IN HOSPITALS.

He said that the best things for cold storage were wool and absorbent cotton, but as these were too expensive for general use he recommended still air as the next best thing; and ammonia and brine system are the only methods applicable to a general storage plant of the size required in an institution. In the preservation of food the chief factor is the temperature, but of almost equal importance are clean, dry, well ventilated rooms and pure air. To employ cold storage successfully depends upon good judgment and good food. There is a great advantage in employing this method because of the saving of money and of the greater variety of food obtainable when cold storage is judiciously employed.

Dr. John H. McCollom gave a paper on

REFUSE DESTROYERS AND DISINFECTANTS.

He emphatically stated that the hospital is not a focus for the spread of diseases, since all refuse matter is burned on the premises. The expense of cremation can be made small by using the heat generated by the compustion of refuse for the manufacture of steam. Considering the amount of refuse destroyed, the expense is very slight and the furnace is justified in its results. Steam under pressure is the best disinfectant for mattresses, clothes and also patients. Formaldehyde gas is effective as a disinfectant since it does destroy animal life but it has no penetrating powers. Corrosive sublimate is good for the walls and floors of a hospital; chloride or zinc cannot be relied upon to destroy micro-organic life.

In the case of infectious diseases, with the exception of smallpox, Dr. McCollom said that if the patient was removed from the general ward at an early stage of the development of the trouble it was not necessary to disinfect the ward except in the immediate vicinity where the patient had been.

THE UTILIZATION OF HOSPITAL WASTE

was the subject of a paper by Dr. F. A. Washburn of the Massachusetts General Hospital. He demonstrated what the hospital had done in the way of utilizing its waste gauze. All the gauze now used in the wards is used first in the operating room; then put through a process of resterilization, taken to the wards and used there for dressings, thus instituting a system of economy by using material formerly considered waste. After discussion, it was proved by Dr. Washburn, to the satisfaction of the members, that the process of resterilization was a perfectly safe and legitimate one.

The paper read by Mr. Jeremiah C. Long, member of Society Mechanical Engineers and chief engineer of the Boston City Hospital, on

ENGINE-ROOM ECONOMIES

dealt chiefly with the question of leakage.

The discussion was led by Mr. Clarence W. Williams, chief engineer of the Massachusetts General Hospital. He recommended a combination of the high and low steam pressure in the matter of heating.

AFTERNOON SESSION.

The general subject of the afternoon meeting was

HOSPITAL ACCOUNTS.

The first paper was read by Dr. C. Irving Fisher, Presbyterian Hospital, New York, New York chairman of the session. He asked for a common plan on which hospital accounts could be drawn up. He said that the accounts must be grouped against the work done and must show the relationship between this work done and the money expended. He presented a tentative schedule for hospital accounts.

Dr. James R. Coddington, New Haven Hospital, New Haven, Conn., spoke on the same subject. He is greatly in favor of the report submitted, but this schedule must be thoroughly talked over and thought about before being generally accepted.

Miss Maud Banfield read a paper on

HOSPITAL STATISTICAL TABLES AS TO CLASSIFICATION OF PATIENTS.

Sir Henry C. Burdett led the discussion and talked on the advantages of a uniform system of accounts.

Thursday's session closed with the reading of the reports of the Executive Committee, the treasurer and the committee on membership. These reports were approved and accepted.

FRIDAY, SEPT. 29 — MORNING SESSION.

THE BRITISH NATIONAL NURSES' PENSION FUND was the subject of SIR HENRY C. BURDETT'S address. In a review of the growth of the British National Pension Fund, he showed that the fund was meeting with the indorsement and co-operation of nurses throughout England. In 1891 he had attempted to inaugurate a similar fund in America but did not meet with any marked success because the nurses in America did not fall into line. He further stated that while he, himself, could not collect funds again, if such funds were collected, he would endeavor to start an association similar to that which already exists in his own country.

Sir Henry paid a tribute to the spirit that pervaded this Seventh Conference of the Association of Hospital Superintendents and he thought that the conference would send forth new energy and life to every hospital in this country. "Render personal service gladly, not because you must, but because you will. Put on the Christ life. Try and follow that, and let it be the beacon light for us, who so often must witness sickness and suffering and the ravages of disease. Sow, sow, sow personal service."

The Committee on Nominations reported the following officers for the ensuing year: President, Dr. George P. Ludlam, New York Hospital, New York City; First Vice-President, Dr. Renwick R. Ross, Buffalo General Hospital; Second Vice-President, Rev. George C. Hunting, Mark's Hospital, Salt Lake City, Utah; Third Vice-President, Mrs. Mary L. Keith, Rochester City Hospital, Rochester, N. Y.; Secretary, George Bailey, Jr., Jefferson Medical School and Hospital, Philadelphia, Pa.; Treasurer, Reuben O'Brien, General Hospital, Paterson, N. J.

A special committee was appointed to determine the place and time for the next meeting. Buffalo was selected and the time to be appointed by the president, secretary and executive committee.

A committee composed of Dr. J. O. Skinner, Dr. C. I. Fisher and Mr. James R. Coddington, was appointed to work out a scheme for uniform accounts.

QUESTION BOX CONDUCTED BY DR. JOHN M. PETERS, CHAIRMAN OF THE SESSION.

QUESTION BOX.

Q. Should visitors be admitted to the wards in the evening?

DRS. ROSS and FISCHER took the affirmative on the basis that certain classes of working people could only visit their friends and relatives during evening hours.

DR. ROWE considered that too much visiting is a mistake, since it interferes with the duty to the patient.

Q. What are the best floors for operating rooms and wards?

DR. HENRY M. HURD claimed that maple is best for ward floors, but, since it is unduly slippery, Southern pine can be used with almost as good results. He recommended a linoleum covering for the floors as it deadens noise.

For the operating room he suggested heavy hexagonal tiles laid with great care.

Q. Is it advisable for officers and pupil nurses to eat at the same table and have social intercourse when off duty?

It was generally agreed that there must always be a distinct demarcation between the officials and the employees of an institution; therefore, except on special occasions, this relationship should be sustained.

Q. What is the best method of conducting laundry against cost and loss of material?

The solution of this question is competent oversight in the ward and in the laundry.

Q. Shall pupil-nurses be paid?

DR. ROSS of Buffalo General Hospital argued in the negative and said that in his hospital the money which had been used heretofore to pay the nurses was now spent in obtaining better and more instructors and in giving the nurses advantages along educational lines which had been impossible before.

Recent Literature.

A Manual of Organic Materia Medica and Pharmacognosy. An Introduction to the Study of the Vegetable Kingdom and the Vegetable and Animal Drugs, comprising the Botanical and Physical Characteristics, Source, Constituents, Pharmacopœial Preparations, Insects Injurious to Drugs and Pharmacal Botany. By LUCIUS E. SAYRE, B.S., Ph.M., Dean of the School of Pharmacy; Professor of Materia Medica and Pharmacy in the University of Kansas; Member of the Committee of Revision of the United States Pharmacopœia. Third edition, revised. With Histology and Microtechnique by WILLIAM C. STEVENS, Professor of Botany in the University of Kansas. With 377 illustrations. Philadelphia: P. Blakiston's Son & Co. 1905.

This book will be found especially serviceable to students and instructors in pharmacy. Particular attention is given to the source, description and recognition of various drugs. Their action and use are included, but little attention is given to this branch of the subject. The book is excellently illustrated, with drawings, photographs and microphotographs, many of which are original. A short section on insects injurious to drugs and a simple method of their extermination with bisulphide of carbon is a useful hint to those carrying large stocks of perishable material. Plant histology and microtechnique occupies about one quarter of the book. Methods of section cutting, applicable to plants, plant growth and various methods of demonstrating cell and tissue development are described. A short chapter is devoted to the identification of drug powders.

Therapeutics: Its Principles and Practice. By HORATIO C. WOOD, M.D., LL.D. Twelfth edition. Thoroughly revised and adapted to the eighth (1905) edition of the United States Pharmacopœia. by HORATIO C. WOOD and HORATIO C. WOOD, Jr., M.D. Philadelphia and London: J. B. Lippincott Company. pp. 885. 1905.

An extensive review of so well known a standard work on therapeutics is unnecessary. The present volume is fully equal to previous editions and has the added merit of conformation with the new Pharmacopœia. Numerous changes and considerable new material have been added. Reliable information is furnished on most of the new drugs, which have come into general use.

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Medical and Surgical Journal.

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OLIVER WENDELL HOLMES AND THE CONTAGIOUSNESS OF PUERPERAL FEVER.

In 1889 the question was put in a Canadian Journal by Dr. Osler to Dr. Holmes whether he derived greater satisfaction from having been the author of the "Chambered Nautilus" or from having written the essay on "Puerperal Fever." In his reply to this question Dr. Holmes mentions in support of the essay that "a lecturer at one of the great London hospitals referred to it the other day, and coupled it with some fine phrases about myself which made me blush either with modesty or vanity."

An interesting and scholarly address on Oliver Wendell Holmes and the Contagiousness of Puerperal Fever was delivered October 8 before the Bath and Bristol Branch of the British Medical Association by Dr. Charles J. Cullingworth, of London, whose name will be recognized by some of our readers as that of a former president (1897) of the Obstetrical Society of London and Consultant in Obstetrics to St. Thomas' Hospital.

Dr. Cullingworth pleads guilty to having been the lecturer referred to by Dr. Holmes and kindly sent this Journal a manuscript copy of his last address for publication; but we have been anticipated in this by the *British Medical Journal* (November 4th) and we are glad to take this method, at least, of calling attention to so appreciative a restatement of the important service rendered by our distinguished fellow townsman to parturient women. This address is the echo of a cry wrung from Dr. Holmes by observation of what was taking place about him no less now than sixty-two years ago, but the echo is as clear, as vivid, as moving, as when the cry first struck upon the ears of his contemporaries.

Dr. Cullingworth's purpose "was to call attention afresh to Holmes's memorable essay, and to try to do something towards removing the reproach — not, I fear, entirely undeserved — that we English-speaking people on both sides the Atlantic, whilst giving abundant honor to Semmelweis, have been in danger of forgetting the earlier and equally remarkable contribution to our knowledge of puerperal fever that we owe to one of our own kith and kin. This forgetfulness has been due, not so much, perhaps, to the overshadowing of Holmes's work by that of Semmelweis, as to the fact that the medical reputation of Holmes himself was put into the shade by the brilliant success he achieved in later years in general literature, and that his own profession came to be proud of him as the autocrat, professor and poet at the breakfast-table, rather than as the fearless and outspoken defender of the life and health of the parturient women."

The address begins with an epitome of the evidence contained in the essay first read before the Boston Society for Medical Improvement, then published in the *New England Quarterly Journal of Medicine and Surgery*, and then reissued with additions in 1855, — a republication due in great measure to the opposition the essay encountered from Drs. Hodge and Meigs in Philadelphia.

The effects of the essay are well stated and the introduction to the republication is freely quoted from, especially those passages dealing with the opposition of the Philadelphia teachers. The familiar, "No man makes a quarrel with me over the counterpane that covers a mother with her newborn infant at her breast. There is no epithet in the vocabulary of slight and sarcasm that can reach my personal sensibilities in such a controversy," and the, "Let it be remembered that *persons* are nothing in this matter; better that twenty pamphleteers should be silenced, or as many professors unseated, than that one mother's life should be taken. There is no quarrel here between men, but there is deadly incompatibility and exterminating warfare between doctrines. . . . Let the men who mold opinions look to it; if there is any voluntary blindness, any interested oversight, any culpable negligence even, in such a matter, and the facts reach the public ear, the pestilence carrier of the lying-in chamber must look to God for pardon, for man will never forgive him," confront us again with all the storaged electrical effect of fifty years ago.

Dr. Cullingworth refers to this introduction to the republication of the essay in these words:

"And thus, with burning words, forged at that white heat which alone befitted the subject, or could give adequate expression to the writer's intense convictions, he brings his introduction to a close. When one reads these words now, — I hope I may say it without irreverence, — it is impossible to avoid comparing them with the eloquent but terrible warnings of the preacher-prophets of the Hebrew scriptures. It was not the fault of these old stalwarts that the message they had to deliver was unillumined by a Gospel that had not yet been revealed, any more than it was the fault of Wendell Holmes and of the distinguished Hungarian who, a few years later, and as the result of independent observation, arrived at the same truth, and encountered an opposition even more relentless, that they were unable to point to the more excellent way of prevention with which we, thanks to later revelations, have since become familiar. Pasteur and Lister had not as yet instituted those researches of which the result has been to place in our hands, if we would but use it, an effectual means not only of checking the spread of puerperal fever but of stamping it out. All honor to the men who, without these researches to guide them, and merely from a study of clinical facts, recognized the main factors in the propagation of puerperal fever, and advocated for its prevention measures which differ in degree rather than in kind from those enjoined by the most scientific and advanced teachers of the present day."

In connection with recent discussions as to the time of life at which a man turns out his best work, our author reminds us that this essay was published when Holmes was thirty-three, but, on the other side, it must be remembered that the earliest chapters of the Breakfast Table service were not published until he was forty-eight.

Dr. Cullingworth devotes some space at the end of his address to the "State of Things To-day," and then sums up with certain conclusions. We find under the former heading the somewhat surprising statements that, even taking the certified cases only, we have to face the unpleasant fact that the lives of more than two thousand women are annually lost in England and Wales from a cause which is almost, if not entirely, preventable, and that puerperal fever continues to prevail, as though Pasteur and Lister had never lived; that such tragedies as those which Holmes recorded are not things of the past, occurring in a certain proportion in ordinary private practice as well as in the practice of ignorant and untrained midwives; that the death-rate from puerperal septic diseases has, if anything, shown a tendency to increase in recent years in each division of the United Kingdom. The causes of this state of things to-day he is disposed to assign to the misuse of anesthesia, and to the ridiculous parody which in many practitioners' hands stands for the use of antiseptics.

The mortality from puerperal fever in Great Britain being what it is, Dr. Cullingworth justly feels that it is neither ill-timed nor out of place to recall the noteworthy chapter in the history of the disease which he made the subject of his wise address.

HOSPITAL NEEDS AND HOSPITAL FINANCES.

FOR many years the question of hospital finances has been one of growing importance. The extraordinary increase of institutions for the care of the sick and the demands for certain types of structure and for implements of various sorts has led to a disproportionate demand upon the resources provided for their maintenance. The result has been that certain hospitals, in New York, for example, have been closed for want of funds, and others have suffered from an increasing load of indebtedness.

The matter had reached such an acute stage in New York that on March 23, 1905, through the auspices of the Association for Improving the Condition of the Poor, a committee was appointed to consider the matter of hospital needs and hospital finances. This committee consists of eleven citizens, two of whom are physicians, under the chairmanship of John E. Parsons. Sub-committees were appointed to take up the subjects of hospital economy, hospital support and hospital accounting and reporting. These sub-committees have recently presented preliminary reports, and the general committee has determined to submit these reports to the hospitals of Greater New York, with a request that they communicate to the committee such criticisms, suggestions and expressions of opinion as may have bearing upon the general subject. In order to furnish a basis of comparison in the hoped-for replies the committee has proposed four questions relating to the plan best fitted to increase the financial support upon which hospitals must rely: to inquire as to the need of a change in the direction of economy, and how such change, if desirable, can be carried out; to consider whether it is desirable to adopt a uniform method of accounting; and finally to pass judgment upon the plan suggested by the sub-committee on accounting which is being generally sent out to the hospitals.

To accomplish the general end in view the committee has printed in concise form a communication to the hospitals of Greater New York in which brief statements of the reports of the sub-

committees are made. The suggestions are of much interest and are clearly made after careful consideration and consultation with persons in a position to speak authoritatively. In the report of the sub-committee on economy, presided over by Dr. John W. Brannan, attention is called to certain "important items with regard to which economy would in the average hospital not only be easy but would seem easy." It is assumed that the public has a right to know that hospitals are run as economically as is consistent with the utmost efficiency, and that it is the duty of the hospital to inform the public regularly and repeatedly both as to the hospital needs and hospital results. It is maintained by this committee that less expensive materials and methods might be used without lessening efficiency. Ether, for example, is wasted. The closed method of inhalation consumes 50% less ether than the open method. The preparation of the skin by means of ether is unnecessary. The expense of this drug alone might be reduced fully one half. Towels may be used in place of gauze and many materials used in the course of surgical operations might be re-sterilized and re-used with a definite saving of expense. A similar economy might also be made with reference to bandages. The most definite waste in hospital materials is, however, in the use of alcohol. The quality ordinarily employed is unnecessarily good and used as a local application its strength may be materially reduced without detriment. Finally, co-operation between hospitals relating to the use of coal, light and purchasing might be much more extensively practised than is at present the case. The recommendation is, therefore, made that a responsible executive be appointed to enforce a definite maximum of service and goods to be used for specific purposes. The general committee invites comment and suggestion on present methods and on the practicability of enforcing certain of the propositions made above.

On the finanical side the sub-committee on accounting and reporting makes various suggestions looking toward a greater uniformity in accounting and the possibility thereby afforded of securing a more accurate basis of comparison, and on these suggestions also the general committee invites comment.

The pamphlet before us submits various schedules as a provisional method of arriving at the facts desired, and these schedules are to be sent to all the hospitals with the hope, which we do not doubt will be gratified, that they will receive the attention of those in authority. An elaborate digest of the latest published report of hospitals in the boroughs of Manhattan and the Bronx has also been prepared which gives in tabular form a large number of the facts concerning the financial status of the New York hospitals. Finally, it is suggested that a campaign of education is desirable to induce the public to give more liberally. Ministers of all denominations are likewise enjoined to speak more freely of the needs of hospitals, and it is proposed that the city increase the rate for free patients.

The movement which we have briefly summarized appears to be not only reasonable but absolutely necessary in the present state of hospital management. Temptations to increase hospitals unduly and also to administer them on extravagant principles are numerous and increasing. The willingness and often eagerness with which patients in all walks of life now seek hospital treatment is becoming a positive menace unless it can be adequately controlled. The entire hospital system now stands on a wholly different basis from its situation twenty or thirty years ago, and this must be clearly taken into account in considering the very natural consequences to which this New York committee is directing its best attention.

A STATE TUBERCULOSIS EXHIBITION.

It is announced that a tuberculosis exhibit will be opened in Boston in Faneuil Hall, Dec. 28, and continue for ten days thereafter, the object being the enlightenment of the general public. This will not be the first time that the attempt has been made to represent in a graphic manner the exact conditions underlying the spread and the prevention of tuberculosis. Such an exhibition has, for example, been held in Baltimore, and also in Boston, and one is about to be held in New York immediately preceding the one in Boston. Repetition is desirable, particularly if the exhibition each time be more complete and instructive. It is evident that at the very best comparatively few people can attend such exhibitions. It is, therefore, necessary that they should be frequent and so arranged that the greatest possible number of people may be induced to learn the lesson which they are designed to teach.

The proposed exhibition in December will be very much more elaborate than any yet attempted, both on account of the extra effort which will be made in this state to render it complete, and also because New York will contribute much material of value. It is proposed to demonstrate

what is being done in Massachusetts, both by public and private enterprise, and for this purpose the State Board of Health is taking measures to inform itself of the exact situation in the various towns and cities of the commonwealth. These data will be shown and should do much toward instructing the public, and particularly toward demonstrating to the delinquents the necessity of concerted action in combating the disease.

The Boston Association for the Relief and Control of Tuberculosis first conceived the idea of such an exhibition, and on presenting the plan to the legislature of 1905, it met with such a degree of favor that an appropriation of two thousand dollars was forthwith made. The general work of arrangement is in the hands of Dr. George B. Magrath, acting secretary of the State Board of Health, and Mr. A. M. Wilson, secretary of the Boston Association for the Relief and Control of Tuberculosis. Under this leadership there can be little question that the plan will be prosecuted with energy and that its ultimate success is assured. Although no general program is as yet available, the intention is to reach various classes in the community by means of appropriate lectures and demonstrations at times when the special class of persons to be reached can be present. For example, evening lectures will be given, and possibly a Saturday selected for school children and teachers. It is possible also that an attempt will be made to reach the non-English speaking part of the population by lectures given in foreign languages.

However these details may be worked out, every effort should and no doubt will be made to make the exhibition as demonstrative as possible, and to bring under its influence those who particularly need such instruction rather than those who are already well informed. As in other enterprises of a similar sort, this must always prove the greatest difficulty. Those who already know will come, and those who are ignorant will be exceedingly likely to stay away unless some skilful advertising plan be devised. Such an exhibition, however, cannot fail to be of decided benefit, even if it falls short of realizing its completest function in reaching the most ignorant classes of the community.

MEDICAL NOTES.

JOHNS HOPKINS MEDICAL SCHOOL. — According to its recently published catalogue, 293 students are this year enrolled in the Johns Hopkins Medical School, with, however, but 58 in the entering class, a smaller number than in either of the higher classes. Of these 58, seven are women. Dr. Osler appears under the title of "Honorary Professor of the Principles and Practice of Medicine."

CHOLERA. — Cholera is reported as prevalent in the regions adjoining the Russo-German frontier. The probability of the disease appearing in Germany is recognized and active measures are being taken by the authorities to prevent its spread.

INFORMATION WANTED AS TO THE PRACTICAL LIVES OF THE BLIND. — Dr. George M. Gould is desirous of obtaining trustworthy information as to the methods which have been devised by the blind in overcoming their disability or in gaining a livelihood. Accounts of such lives, anecdotes, references to literature, etc., will be appreciated. Communications should be addressed to Dr. Gould, 1722 Walnut Street, Philadelphia.

NATIONAL ASSOCIATION FOR THE STUDY OF EPILEPSY. — In another column is announced the fifth annual meeting of this association, to be held in New York the latter part of this month. The objects for which the association stands are to promote the general welfare of epileptics; to stimulate the study of causes and the methods of cure of the disease; to advocate the care of epileptics in institutions where they may receive a common school education, acquire trades and be treated by the best possible methods; and finally to assist the various states in America in making proper provision for epileptics. The program offers much of interest. Membership of suitable persons in the association is desired, and those wishing to join should apply to Dr. W. P. Spratling, Sonyea, N. Y., or to Dr. Everett Flood, of Palmer, Mass.

THE STATE CONFERENCE OF CHARITIES. — The State Conference of Charities, held last week in Boston, illustrated the broad field which is now being covered by that and other similar organizations. Much time was given to the consideration of medical inspection in the public schools, and speakers from various cities discussed the matter. One evening was given over to the consideration of tuberculosis. Dr. S. A. Knopf, of New York, made the chief address, advocating among other things that every public school should have a swimming tank and that swimming should be made obligatory. Dr. Livingston Farrand, of New York, secretary of the National Association for the Study and Prevention of

Tuberculosis, spoke on the necessity and desirability of organized effort to combat tuberculosis. The general subject of the juvenile court was discussed by Judge Julian W. Mack, of Chicago, and others.

The Death of Mrs. Josephine Shaw Lowell. — The recent death of Mrs. Josephine Shaw Lowell in New York has taken from the city one of the most conspicuous figures in its charitable work. Since the death of her husband, Gen. Charles Lowell, which resulted from wounds received in the battle of Cedar Creek during the Civil War, Mrs. Lowell had devoted herself to the cause of charity in New York. Governor Tilden appointed her a member of the State Board of Charities, and she was later instrumental in the organization of the Charity Organization Society. Although not of the strongest physique, she led a most active life, interesting herself in all which made for better government and improved social conditions. Her death at the comparatively early age of sixty-two must be regarded not only a loss to New York but to the cause of civic reform in general. Originally from New England, her body was interred in Mount Auburn Cemetery, where her husband is also buried.

Although not primarily concerned with medical matters, her work brought her into the most intimate relations with sickness and the evils resulting therefrom. Her opinions were always received with respect, whether by the laity or by those having strictly professional interests.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, Nov. 15, 1905, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 38, scarlatina 23, typhoid fever 28, measles 139, tuberculosis 37, smallpox 0.

The death-rate of the reported deaths for the week ending Nov. 15, 1905, was 14.53.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, Nov. 11, 1905, was 188, against 194 the corresponding week of last year, showing a decrease of 6 deaths, and making the death-rate for the week 15.60. Of this number 100 were males and 88 were females; 184 were white and 4 colored; 118 were born in the United States, 68 in foreign countries, and 2 unknown; 33 were of American parentage, 129 of foreign parentage, and 26 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 38 cases and 3 deaths; scarlatina, 26 cases and 1 death; typhoid fever, 18 cases and 2 deaths; measles, 125 cases and 2 deaths; tuberculosis, 53 cases and 25 deaths; smallpox, no cases and no deaths. The deaths from pneumonia were 20, whooping cough 0, heart disease 25, bronchitis 6, and marasmus 6. There were 9 deaths from violent causes. The number of children who died under one year was 29; the number under five years, 46. The number of persons who died over sixty years of age was 44. The deaths in public institutions were 58.

There were 3 deaths and 2 cases reported from cerebrospinal meningitis during the week.

A Rumored Antivivisection Law for Massachusetts. — It is rumored that a movement is on foot in this state to present a bill before the legislature this winter proposing to prohibit all experiments without qualification upon dogs or cats. It is reported that a petition is being widely circulated in the hope of securing a large number of signatures. Should this bill materialize, we have no doubt it will be met as its predecessors have been.

Superintendent of the Leper Hospital. — The appointment of Dr. Louis Edmonds, formerly Associate Medical Examiner of Barnstable County, has been announced as superintendent of the State Leper Colony on Penikese Island in Buzzards Bay. Dr. Edmonds had had charge of the lepers at Harwich and has interested himself in the disease. It is stated that the five lepers in this state are about to be removed to the new hospital; of these, two are Chinese and two Portuguese, one of the latter a woman.

NEW YORK.

A Centenarian. — Mrs. Delia George, believed to be the oldest woman in the state, died at Lancaster, N. Y., on Nov. 1, at the alleged age of one hundred and eight years. With her at the time of her death, which occurred suddenly, were her son and daughter, aged respectively eighty-five and eighty-six.

New York Surgical Society. — At the annual meeting of the New York Surgical Society, held Nov. 8, 1905, the following officers were elected for the ensuing year: President, Dr. George Woolsey; Vice-President, Dr. Joseph A. Blake; Secretary and Treasurer, Dr. John A. Hartwell.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, NOV. 4, 1905.

CITIES.	Population.*	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diphtheria and croup.	Typhoid Fever.	Diarrheal Diseases.
New York . .	3,906,644	1,187	287	22.58	13.72	1.85	.92	4.38
Chicago . .	1,990,750	498	118	20.08	15.45	3.41	1.20	6.42
Philadelphia	1,407,968	394	87	18.86	8.88	2.54	1.77	5.84
St. Louis . .	633,606	—	—	—	—	—	—	—
Baltimore . .	542,229	180	60	31.67	9.44	1.11	5.00	5.56
Cleveland . .	444,251	—	—	—	—	—	—	—
Buffalo . . .	408,645	—	—	—	—	—	—	—
Pittsburg . .	362,403	—	—	—	—	—	—	—
Cincinnati . .	338,277	—	—	—	—	—	—	—
Milwaukee . .	325,990	—	—	—	—	—	—	—
Washington .	300,776	—	—	—	—	—	—	—
Providence .	196 744	56	13	30.36	7.14	1.79	—	7.14
Boston . . .	595,368	190	53	18.94	13.16	—	1.57	4.21
Worcester . .	127,963	35	12	17.14	5.71	—	—	11.43
Fall River . .	105,697	34	12	20.59	17.65	2.94	—	—
Cambridge .	97,426	23	3	30.43	17.39	—	—	8.70
Lowell . . .	94,845	21	9	23.81	9.52	—	—	9.52
Lynn	77,925	20	6	10.00	—	—	5.00	—
New Bedford	74,321	21	8	38.10	33.33	4.76	—	14.29
Springfield .	73,484	14	3	—	—	—	—	—
Lawrence . .	69,989	33	11	24.24	27.27	—	3.03	6.06
Somerville .	68,188	20	4	20.00	15.00	—	5.00	10.00
Holyoke . . .	49,124	14	5	28.57	7.14	7.14	7.14	—
Brockton . .	47,782	14	3	14.29	—	—	—	—
Malden . . .	37,986	9	—	44.44	—	—	11.11	—
Haverhill . .	37,818	15	4	—	13.33	—	—	—
Salem	37,586	16	4	12.50	12.50	—	6.25	—
Chelsea . . .	37,277	6	2	—	16.67	—	—	—
Newton . . .	36,694	7	—	14.29	—	14.29	—	—
Fitchburg . .	33,017	12	5	16.67	—	—	—	—
Taunton . . .	30,952	9	3	11.11	11.11	—	—	—
Everett . . .	29,108	7	2	—	—	—	—	—
Quincy . . .	28,067	4	2	25.00	—	—	—	—
Waltham . . .	26,239	7	—	14.29	—	—	—	—
Gloucester .	26,006	—	—	—	—	—	—	—
Pittsfield . .	25,000	9	1	22.22	—	—	11.11	—
Brookline . .	23,424	7	—	14.29	14.29	—	—	—
North Adams	22,125	6	1	—	—	—	—	—
Chicopee . .	20,187	6	3	—	—	—	—	—
Northampton	19,942	4	1	—	—	—	—	—
Medford . .	19,638	3	—	—	66.67	—	—	—
Beverly . . .	15,222	0	—	—	—	—	—	—
Newburyport	14,673	6	—	—	16.67	—	—	—
Hyde Park .	14,492	2	0	—	—	—	—	—
Watertown . .	14,401	—	—	—	—	—	—	—
Melrose . . .	14,294	5	0	—	20.00	—	—	—
Leominster .	14,290	—	—	—	—	—	—	—
Marlboro . .	14,072	5	2	—	20.00	—	—	—
Westfield . .	13,609	3	2	33.33	33.33	33.33	—	—
Clinton . . .	13,103	6	1	—	—	—	—	—
Peabody . . .	13,097	—	—	—	—	—	—	—
Attleboro . .	12,702	—	—	—	—	—	—	—
Revere . . .	12,647	1	—	100.00	—	—	—	—
Adams . . .	12,482	5	3	20.00	—	—	—	—
Milford . . .	12,105	—	—	—	—	—	—	—
Gardner . . .	11,981	—	—	—	—	—	—	—
Weymouth . .	11,585	0	—	—	—	—	—	—
Framingham	11,549	—	—	—	—	—	—	—
Watertown .	11,302	1	0	—	—	—	—	—
Plymouth . .	11,118	—	—	—	—	—	—	—
Southbridge .	10,947	—	—	—	—	—	—	—
Wakefield . .	—	1	—	—	—	—	—	—

* As last reported.

Deaths reported, 2,916; under five years of age, 730; principal infectious diseases (smallpox, measles, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption), 650; acute lung diseases 368, consumption 339, scarlet fever 9, whooping cough 12, cerebrospinal meningitis 18, smallpox 0, erysipelas 6, puerperal fever 8, measles 8, typhoid fever 44, diarrheal diseases 148, diphtheria and croup 38.

From whooping cough, New York 3, Chicago 2, Philadelphia 4, Baltimore 2, Lawrence 1. From scarlet fever, New York 6, Baltimore 1, Cambridge 1, New Bedford 1. From cerebrospinal meningitis, New York 15, Baltimore 1, Providence 1, Boston 1. From erysipelas, New York 4, Philadelphia 1, Boston 1. From typhoid fever, New York 11, Chicago 6, Philadelphia 7, Baltimore 9, Boston 3, Lynn, Lawrence, Springfield, Somerville, Holyoke, Salem, Malden and Pittsfield 1 each. From measles, New York 5, Baltimore 1, Boston 1, Lawrence 1. From diphtheria and croup, New York 22, Chicago 17, Philadelphia 10, Baltimore 2, Providence 1, Fall River, New Bedford, Springfield, Holyoke, Newton and Westfield 1 each.

In the seventy-six great towns of England and Wales, with an estimated population of 15,609,377, for the week ending Oct. 28, 1905, the death-rate was 14.8. Deaths reported 4,422; acute diseases of the respiratory organs (London) 157, whooping cough 40, diphtheria 42, measles 72, smallpox 0, scarlet fever 52.

The death rate ranged from 3.7 in Hornsey to 22.6 in Hanley; London 15.9, West Ham 17.1, Brighton 13.9, Southampton 12.3, Plymouth 18.4, Bristol 14.3, Birmingham 14.0, Leicester 10.3, Nottingham 19.5, Birkenhead 13.0, Liverpool 19.2, Wigan 10.2, Bolton 16.1, Manchester 16.5, Salford 16.2, Halifax 13.9, Bradford 13.8, Leeds 13.4, Hull, 13.5, Sheffield 13.4, Newcastle-on-Tyne 18.1, Cardiff 13.3, Rhondda 15.4, Merthyr Tydfil 16.9, Tottenham 8.5, Rochdale 15.7.

METEOROLOGICAL RECORD.

For the week ending Nov. 4, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

DATE	Barometer.	Thermometer.			Relative humidity.			Direction of wind.		Velocity of wind.		We'th'r *		Rainfall in Inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A.M.	8.00 P.M.	Daily mean.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	
S. . 29	30.56	42	45	38	66	66	66	N	E	12	3	C.	C.	0
M. 30	30.48	40	47	34	69	70	70	N	N E	12	5	C.	C.	0
T. . 31	30.23	44	54	35	81	82	82	N	E S E	1	9	C.	O.	0
W. . 1	29.77	50	64	37	97	94	96	S	W	5	23	G.	C.	T.
T. . 2	30.14	40	46	33	65	45	55	W	W	15	6	C.	C.	0
F. . 3	30.22	42	52	32	86	64	75	N W	S E	4	14	F.	O.	0
S. . 4	30.02	45	50	40	96	71	84	N W	N W	12	7	R.	C.	.48
☞	30.20		51	36			70							.48

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Means for the week.

SOCIETY NOTICES.

THE NATIONAL ASSOCIATION FOR THE STUDY OF EPILEPSY AND THE CARE AND TREATMENT OF EPILEPTICS. — The fifth annual meeting of this association will be held in the Academy of Medicine, New York, Nov. 29.

NEW ENGLAND ASSOCIATION FOR THE EDUCATION OF NURSES. — A meeting of this association will be held at the Boston Medical Library, 8, The Fenway, Nov. 24. There will be a session at four P.M. and another at eight. All interested in the meetings of this association are cordially invited to be present at these meetings.

R. C. CABOT, *President.*

RECENT DEATHS.

CHARLES EDWARD DEVER, M.D., M.M.S.S., died in Lynn, Oct. 24, 1905, aged forty-three years.

DR. FRED TEMPLETON ZABRISKIE, of New York, died on Nov. 5, in his thirty-fourth year. He was graduated from the College of Physicians and Surgeons, New York, in 1895, and afterwards served as interne in St. Luke's Hospital.

BOOKS AND PAMPHLETS RECEIVED.

The National Standard Dispensatory. Containing the Natural History, Chemistry, Pharmacy, Actions and Uses of Medicines. By Hobart Amory Hare, B.Sc., M.D., Charles Caspari, Jr., Ph.G., Phar.D., and Henry H. Rusby, M.D., and others. Illustrated. Philadelphia and New York: Lea Brothers & Co. 1905.

Transactions of the Obstetrical Society of London. Vol. XLVII. For the year 1905. Part III, for June and July.

University of California Publications. Physiology. On the Influence of Temperature upon Cardiac Contraction and Its Relation to Influence of Temperature upon Chemical Reaction Velocity. By Charles D. Snyder. Artificial Membrane-Formation and Chemical Fertilization in a Starfish (Asternia). By Jacques Loeb.

Tuberculosis: The Problem for the General Practitioner. By William Porter, M.D. Reprint.

The Warfare against Consumption in St. Louis. By the St. Louis Society for the Prevention of Tuberculosis.

Hygiene and Diet in the Care of the Consumptive. By William Porter, M.D. Reprint.

Vital Questions. By Henry Dwight Chapin, M.D. New York: Thomas Y. Crowell & Co. 1905.

Original Articles.

THE USE OF THE BIOGRAPH IN MEDICINE.*

BY WALTER GREENOUGH CHASE, M.D., BOSTON.

PHOTOGRAPHY and its allied branches play such an important part in medical science to-day that we can hardly realize their value without comparing the representations in modern medical literature with those of some twenty years ago, when all illustrations had to be drawn or painted and reproduced on wood by the engraver, a most costly process. Instantaneous photography has also yielded most valuable results. The first exponent of this was Muybridge, who some twenty-five years ago startled the scientific world with his pictures of animal locomotion, for the production of which he arranged a series of cameras, the plates in which were so timed that a series of instantaneous pictures was rapidly taken one after the other. These printed on a strip of paper and placed in the zoöpraxiscope gave the effect of motion. These proved a shock to those whose conception of animals in motion had been derived from the classic representations, the prancing steed of art being rudely transformed into an animal whose legs seemed tied into knots. Then came the invention of the moving picture, or biograph, by means of which a series of rapidly taken pictures can be so projected on the screen that the figures seem actually moving.

Some months ago it occurred to me that the biograph might be employed to depict pathologic motion, and that a series of films covering the various phases would not only be useful to the student from a diagnostic standpoint but of value in studying and analyzing the muscular action. The first step necessary in carrying out this idea was to learn the process of taking and projecting. The American Mutoscope and Biograph Company kindly put their facilities at my disposal, and instructed me in the use of the apparatus. Dr. Spratling of the Craig Colony for epileptics had sometime previously written them asking as to the cost of biographing epileptic subjects, but the expense had been prohibitive. The idea of reproducing various gaits had also been tried some years ago by Dr. Alex McLane Hamilton with the aid of a Lumière camera, and Dr. Doyen's experiments in biographing surgical methods are well known. An attempt I understand had been made in the Salpetrière Hospital of Paris to biograph the convulsions of epilepsy. Baron Henri de Rothschild, a former student of medicine and whose tastes ran in rather eccentric lines, had also used the biograph in showing surgical methods in the Rothschild hospital; and at the reception following his marriage to Mademoiselle Weisweiller a biograph displayed for the guests Dr. Chalot's method of curing hunchbacks.

In a recent number of a French physiological journal Anasthasius describes his method of taking a series of biographic pictures at stated intervals of a bud unfolding, and then, by a rapid projection on the screen, giving the effect of a flower suddenly blooming. He also biographed the motion of a fly, and by slowly reproducing this gave the appearance of a bird flying. Some experiments, I understand, have been made in Germany in the reproduction biographically, of gaits. H. M. Marvin in 1899 carried out this idea in depicting the growth of a tree.

The most difficult pathologic movement to reproduce is that of an epileptic seizure, for the reason that it takes several minutes to set up and focus a biographic camera, and your patient is not always sufficiently obliging as to have his seizure out of doors in an available place and also at a time when the sun is at its best, for an outdoor light or a room with powerful electric lights especially arranged is absolutely necessary to good results. The only place successfully to do such work is where there is an abundance of material, as in an epileptic colony. Dr. Spratling of the Craig Colony kindly placed the resources of the colony at my disposal, and, with the assistance of the staff, Drs. Collier, Shanahan and N. B. Ross, I have been able to successfully biograph twenty-one separate seizures, including one case of status epilepticus, which is described below.

The method may be interesting. Realizing that it was impossible to set up the camera after the seizure had commenced, we had some one hundred and twenty-five male patients from the infirmary assembled in a convenient spot out of doors on a warm summer day. The clothes were removed and the patients covered with blankets, so that, a seizure occurring, the blanket could be readily dropped and the subject, within a very few seconds, placed in the range of the camera. For a background I had a large, dark brown screen made, and later a black one. The points where the head and feet of the patient were to be placed were carefully marked, and by this means the patient placed in focus, a microscopic focus on a normal subject having been previously made. It is obvious that, when the patient returned to semi-consciousness and the automatic stage commenced, the focus might vary, but later, by the use of a traveling head to the tripod, I could follow the motions somewhat, and Figs. 14 and 15 show a patient in this stage. Figs. 2 and 3 show two very marked cases of athetosis. Figs. 4 to 9 inclusive show various attitudes during attacks of grand mal seizure.

On one side of the camera is a gauge which indicates the number of pictures per second which are being taken, and in order to have the reproduction run smoothly it is absolutely essential to turn the crank evenly. The film comes in lengths of 200 feet long by 1¾ inches in width, while the negative itself is one inch in width by ¾ in depth. The length of exposure can be varied by the adjustment of the shutter, 1-60th of a second being the usual length of exposure. On the film there are sixteen separate pictures to the foot, and the rate of running is from fourteen to sixteen per second.

*A paper read and illustrated with biograph pictures before the Boston Medical Library Association, Nov. 15, 1905.

For the reproduction on the screen, a positive is necessary, and this is made by contact printing. A sensitized film is placed over the negative and the two run automatically before an electric light. The positive film is then run through an Edison projecting apparatus which is set in front of the condenser of a stereopticon at just such a distance before the crossing of the rays that the whole field is illuminated. By the use of a water cell in the condenser, all danger of fire is avoided, as a stop of a few seconds before a plain condenser will result in an explosion. Professor Gage of Columbia has written a monograph on projection of microscopic slides, which gives most valuable points.

WHAT IS THE PRACTICAL APPLICATION

of this biographic work? First, and most important, is the educational use, both for physicians and students. The teacher, when lecturing to a large audience, can have the biographic projection as large or larger than life size, thrown on the screen, and reproduce all the movement of rare cases, which might not occur for months in his clinic. As an instance, I have biographed one rare case of double nystagmus in which the movement of the eyes is clearly shown. Again, with the assistance of Dr. Fernald of the Massachusetts Home for Feeble-Minded, I have successfully taken a group of rhythmic idiots, each with his individual motion and keeping time to music. The reproduction and analysis of the different gaits offers a wide range for the use of this instrument. On the 2,500 feet which have already been taken this summer, 1,500 of which were used on epileptic convulsions, there are 37,000 separate pictures, any one of which may be enlarged and the most characteristic ones mounted in series, thereby showing students the phases of the disease, where biographic projections are not feasible. I have selected a few of these to illustrate. These have been enlarged and photographed down again to blocks for printing. These enlargements may also be useful in the illustration of books.

A most novel application is the pocket biograph, one of which, representing a seizure, has just been made for me by the Biograph Company. Some sixty small prints in series are made and bound together in small book form. Holding these by the lower side and pressing the thumb along the top, the actual motion is reproduced. Imagine the value to students or doctor while sitting quietly at home able to run through a series of these. Then again, the biogen or instrument used in the one-cent vaudeville parlors now common in most cities is especially adapted for showing these rare cases to students. From the ordinary biograph negative prints can be made for both these instruments, and different rolls easily substituted, as in an Æolian piano.

THE CASE OF STATUS

alluded to is illustrated by Figs. 10, 11 and 12 in both the stuporous and convulsive stages, and to my knowledge they are the only instantaneous pictures taken of such a condition. Two hundred feet of film were used in this case, occupying some four minutes in running. When it is considered that there are sixteen pictures to every foot of film, each one of which is slightly different, it will be seen that there is a total of 3,200 pictures of status, an invaluable record of this condition for the student. When magnified by the biograph projection to life size, the very action of the muscles may be studied. The history of this case will prove of much interest, therefore I transcribe it, together with a slight account of the present seizure.

Patient, F. K., male, admitted to the Craig Colony Dec. 4, 1902, at age of seven, now ten; age at onset of attacks, two. Abuse by parents was supposed to have brought on attacks. The hereditary influence was bad, parents having been alcoholic and very nervous. Attacks occurred seldom at first, and were of frequent occurrence daily at time of admission. The nature of aura unknown. Examination at time of admission showed: weight, 51½ pounds; height, 3 feet 10½ inches; hearing, sight, lungs, heart, tongue, eyes, skin, normal; speech, lisping; reflexes diminished; disorders of motility, none; stigmata; high, narrow, asymmetrical, arched palate; high forehead; broad nose; torus.

From admission, Dec. 4, 1902, to Nov. 11, 1904, he had one hundred and four seizures, commencing with seven in the first month and increasing to twenty-seven in October, 1904. In January and February, 1905, he had none, and his record of seizures since is: March, 1; April, 3; May, 3; June, 3; July, 3; August, 4; September, 2, until Sept. 21, when this attack of status occurred.

Present attack: From one P. M. to 2.25 P.M. he had fifteen severe attacks culminating at this time in status which lasted from 2.25 to 3.20, at which time he went to sleep and slept till 5.30 P.M. On the next day patient was up and dressed and partook of light nourishment.

Treatment: During the attack he was given three one-ounce doses of the following per rectum at 1.25, 2 and 3 o'clock P.M.: Chloral Hydrate, gr. 75. Potass. Bromide, gr. 180. Aq. Dist. ad., ℥iii.

The temperature, pulse and respiration chart are of interest.

	Hour.	Temp.	Pulse.	Resp.	
P.M.	1.10	99.4	120	24	Sept. 21
	2.30	101.2	126	30	" "
	3.20	101.0	132	36	" "
	5	101.0	126	30	" "
	8	99.4	96	24	" "
	12	98.8	102	24	" "
A.M.	4	98.4	96	24	" 22
	8	98.6	90	24	" "

A SIMPLE METHOD OF MEASURING AND GRAPHICALLY PLOTTING SPINAL CURVATURE AND OTHER ASYMMETRIES BY MEANS OF A NEW DIRECT-READING SCOLIOMETER.

BY GEORGE W. FITZ, M.D., BOSTON,
Orthopedic Surgeon, Boston Dispensary, etc.

THE object of this paper is to set forth a practical method, at once simple, accurate and inexpensive, by which definite measurements can be made. The only good methods now in use are both complicated and expensive, as, for example, the Schulthess method and the various applications of the pantograph, and in consequence are



Fig. 1.



Fig. 2.



Fig. 3.



Fig. 4.



Fig. 5.

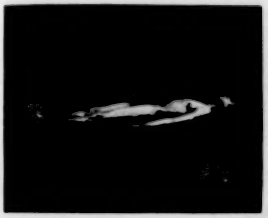


Fig. 6.



Fig. 7.

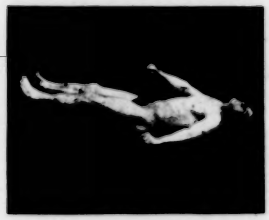


Fig. 8.



Fig. 9.



Fig. 10.



Fig. 11.



Fig. 12.

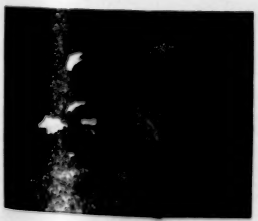


Fig. 13.



Fig. 14.



Fig. 15.

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seldom used even in clinic work. The surgeon has come to depend upon his eye to note changes and so is not able to keep accurate records. By the method here presented, it is possible for anyone to keep adequate records with a minimum expenditure of time and trouble.

Apparatus. — (1) A scoliometer consisting of a sheet of transparent celluloid with rectangular graduations and with two level glasses set at right angles to each other for determining the level of both the horizontal and vertical lines of graduation.

(2) A black flesh pencil for marking the spinous processes of the vertebræ, anterio-superior spines, clavicles, scapulæ and such other points as it is desired to measure for record.

(3) Card catalogue cards, 12 by 8 in., graduated to quarter-inch squares, or 6 by 4 in. graduated to eighth-inch squares, (or such other size and graduation as desired), for recording and plotting.

Description of the scoliometer. — The scoliometer consists of a sheet of transparent celluloid 2-100 in. in thickness and 52 cm. long by as great a breadth as is desired, a convenient breadth being 16 cm. This sheet is accurately ruled as shown in the accompanying figure by means of a needle point. The longitudinal graduations are 1 cm. apart and every second one has waterproof black ink run into the line to facilitate the measuring. The cross lines also may be inked, but ordinarily it is not necessary. A small level glass, the tube of which is bent to the curve of a circle of 12-in. radius [1] is fastened below *A* at exact right angles to the longitudinal lines, so that when the bubble is on its index these lines are exactly vertical. Another similar level glass is fastened in like manner below *B* and adjusted so that when the bubble is at the index the longitudinal lines are horizontal and the cross lines vertical.

Application of the scoliometer. — (1) To measure deviation of the spine: Place the patient standing upon a chair or platform about 16 or 20 inches in height, and spot the tips of the spinous processes of the vertebræ, the posterior-superior spines, the spines and lower angles of the scapulæ with the flesh pencil. The scoliometer is then placed upon the back in such a way as to bring the zero point of the longitudinal scale to the tip of the seventh cervical vertebra,[2] and to bring the lower end of the midvertical line to the cleft of the buttocks. The middle line of the scoliometer now corresponds with the line of the spine, provided the latter is normal. If abnormal, the amount of lateral deviation from the median line is measured directly in the following manner: Looking at the back through the scoliometer and keeping the eye well away from the latter (about 2 ft.) with the line of vision approximately perpendicular to the plane of the scoliometer at the point where the measurement is being made, one sees the graduations of the scoliometer projected upon the back of the subject and can easily read the amount of the deviation from the median line in centimeters and fractions.

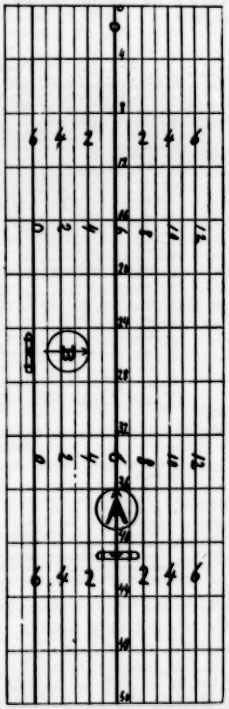


FIG. 1. — Scoliometer made of transparent celluloid for measuring deformities and asymmetries of the human body for graphic record. Scale ½ full size, graduations centimeters.

The method of reading and recording so as to permit reproduction of the curve by means of plotting is as follows:

Read and record the vertical distance downward from the zero point upon the seventh cervical spine to the successive distances, 4, 8, 12, 16, etc., and the amount of lateral deviation of the spine from the median line at each of these successive points (or such of them as are necessary to define the curve).

(2) To measure the lateral deviation of the spine with reference to a true vertical midline: Place the scoliometer upon the back of the subject with the zero upon the seventh cervical process [3] and bring the bubble of level *A* to its index; the lines of the scoliometer are now

[1] With this curve the motion of the bubble for 1 degree of tilting is equal to the motion of the lower end of a 12-in. plumb bob with the same amount of tilting; hence, it is equally as accurate with the added advantage that one is rid of all difficulties of suspension and the element of friction.

[2] If one wishes to use the more logical but less convenient method of taking the pelvis for the starting point (point of reference) for the measurement he may spot the posterior-superior iliac spines and joining them by a line take the mid point of that line as the reference point. The distance from this point to the seventh cervical spine gives a convenient spine length if one is careful to avoid variation of inclination of head and antero-posterior curves of spine.

[3] One can use the reverse position and start from the pelvis as suggested above.

vertical and the measurement can be carried out as in (1). This is usually a more significant measurement than (1), since it measures lateral posture as well as deformity. The accompanying table gives such a record and the accompanying figure shows the method of plotting the curve from the record.[4]

scoliometer so that the longitudinal lines are horizontal as determined by level *B;* if the zero line is then adjusted to one of the anterio-superior spines the relation of the other to it is determined and any tilting present discovered and measured.

This is an especially important measurement in a case of mild or beginning scoliosis when one

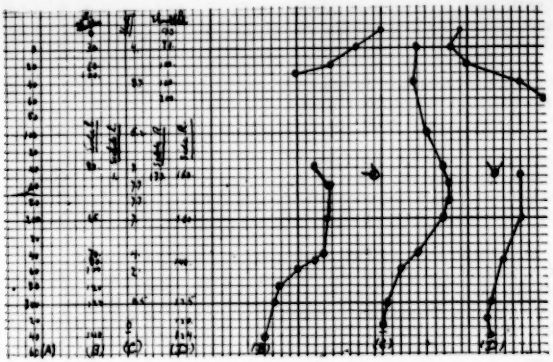


TABLE OF MEASUREMENTS AND PLOTTED CURVES FROM SAME CASE, USING VERTICAL CO-ORDINATES. (SEE 2.)

Column (*A*). Vertical distances downward from the seventh cervical process in millimeters.

Column (*B*). Distances in millimeters from the vertical line passing through the midpoint of the pelvis to defining points of the left shoulder, the angle of the left scapula, and of the left side at the levels indicated in column (*A*).

Column (*C*). Corresponding distances to points in the spotted line of spinous processes.

Column (*D*). Corresponding distances to the right shoulder, angle of right scapula and to the right side.

Ordinarily columns (*A*) and (*C*) only are used, and, even without an assistant to record, these measurements take only about one minute. With an assistant the whole set can be taken and recorded in two minutes or less.

(3) To measure the lateral contour of the trunk: If desired, the whole lateral contour of the trunk may be measured, recorded and plotted by the scoliometer in like manner, either by having the scoliometer broad enough to include the entire trunk or by shifting the median line of the narrower scoliometer a measured distance to each side of the median position recorded as above and then measuring the deviations of the side contours and plotting them in their proper relation to the median curve.

(4) To measure the lateral displacement of the shoulders in relation to pelvis: Place the zero point of the scoliometer upon the tip of the seventh cervical spine,[5] swing the scoliometer to the vertical position, read off the lateral distance of the lower end of the median line from the cleft of the buttocks, and record it as displacement of shoulders to right or left of pelvis.

(5) To measure the lateral tilt of the pelvis: The lateral tilt of the pelvis due to a short leg, to congenital deformity, or to functional shortening through flattening of the arch of one foot or relaxation of knee when bearing weight, may be measured by spotting the anterio-superior iliac spines with the flesh pencil and then applying the scoliometer as in (2) and adjusting the zero line to one of the spines. The tilt of the other spine is then measured. This measurement is seeking its cause, since by it not only can an anatomically short leg be discovered but an equally deforming functionally short leg as well, whereas otherwise the latter would almost surely escape detection, since no anatomical measurement would show it.

(6) To measure antero-posterior curves: By holding the scoliometer at the side of the subject it is possible to measure and record antero-posterior curves with a fair degree of satisfaction in many cases, though the apparatus is not especially adapted to this purpose.

(7) To measure shoulder levels: With the scoliometer in a horizontal position, the difference in levels of shoulders can be instantly measured. The observer should stand in front of the subject. At times it may be necessary to mark corresponding points on the two shoulders with the flesh pencil but usually this is not necessary.

A number of other applications of the scoliometer are feasible as, for example, to measure the lateral or antero-posterior deviation of the head, the level of the eyes, the horizontal and vertical position of the arms, etc.

In the hands of an observer of even moderate mechanical skill this scoliometer furnishes a means for a complete study of the significant points in the progress of a case of scoliosis under treatment and avoids the necessity for the use of

[4] The plotting is not necessary for record since numerical results are more easily compared and successive measurements may be recorded on the same card, thus saving space.

[5] One can start from the pelvis as suggested in footnote 2.

photography for that purpose, even for the demonstration of improvement when showing cases or in publishing results, since the plotted curves are equally complete and exact and the measurements themselves are much more definitely comparable.

THE CITY PHYSICIAN, HIS DUTIES AND RESPONSIBILITIES.

BY JOHN H. McCOLLOM, M.D., BOSTON,

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(Concluded from No. 20, p. 546.)

"BEDROOMS are here provided for 200 nurses, and ample provision has been made for the medical superintendent and the matron, as well as for the professional staff. Lavatories and bathrooms are arranged on a most complete scale. There is a large recreation room; sitting rooms are provided for use during leisure hours, and four large sick rooms are available in the event of non-infectious illness occurring among the nurses.

"Facing Bilsland Drive is the inquiry room, the arrangements of which allow visitors every facility for receiving direct and reliable information regarding the condition of patients. A large Dorcas store has been provided in the basement of this building, and the upper floors contain the recreation room, bedrooms for the male employees, a workshop and telephone room.

"On either side of the inquiry room block are the morgue and clearing house blocks, the former being equipped with all the necessary appurtenances of laboratory, museum, lecture hall, post-mortem room and funeral apartment, while the clearing house has six separate bathrooms for males and females, with waiting and retiring rooms. The fire engine station is placed in the middle of the clearing house building, this position being the most convenient and central for the protection of the hospital.

"At the eastern extremity of the site are placed the wash-house, the laundry, the boiler sheds, the pump for raising the water supply into the tower, various workshops and the stables. In this position, a railway siding affords the means of bringing in fuel and other supplies.

"On the south of the inquiry room block, in the center of the hospital, flanked on either side with pavilions, are placed the kitchen and stores block, the water tower, and the day workers' block.

"Besides the main kitchen, which will provide the food for the whole establishment, the building contains on the same level, dining halls, stores, dairy, dispensary, and offices for the clerk of works and the house steward. On the upper floor there is store accommodation for the matron, a sewing room, bedrooms, stores and lavatory.

"The water tower, which has already been mentioned as an indispensable adjunct of the hospital, provides storage on four different levels, the upper tanks supplying the flushing cisterns in the administrative block.

"The day workers' block contains seventy-eight bedrooms, as well as a recreation room, napery stores, baths, lavatories and other accommodation on a liberal scale.

"On either side of the entrance gateway in Bilsland Drive are houses intended for the house steward, the clerk of works and the other non-professional officers of the hospital.

"The lighting of the whole establishment is supplied by electricity. All the buildings will be regulated in temperature by the circulation of hot water, although open fires are provided in the pavilions and in certain of the dormitories.

"While due attention has been bestowed on careful interior arrangements, the external appearance of the buildings has not been neglected. The style adopted is a free treatment of Elizabethan architecture. The administrative block, the gate house, and the cottages in Bilsland Drive are built of Dumfriesshire freestone. The pavilions, the tower, the kitchen and the other erections are built with a combination of Scottish terra-cotta brickwork and freestone facings, the coloring giving warmth of tone and enhancing the general aspect of the buildings.

"The entire cost of the Ruchill Hospital will probably exceed £250,000, or about $1,250,000. This may be regarded as a great outlay by certain critics, but it has to be borne in mind that the various buildings which form the hospital present the appearance of a small town, and the committee, to whom the erection of the institution was intrusted, had ever before them the determination that, without incurring the charge of extravagance, every detail of Ruchill Hospital would in itself be as perfect as thought and experience could devise, and that the outcome of their labors would sustain the high tradition of the corporation of Glasgow in every department of municipal enterprise."

It is, therefore, evident that Glasgow is more liberally supplied with hospitals for infectious diseases than any city in this country; or to state it in a different way, there are beds for patients ill with infectious diseases for 9.79 out of every 10,000 of the population. This is a magnificent work in sanitary science and has been a very important factor in lowering the death-rate of Glasgow to an astonishing degree. It is well to remember that the population of Glasgow in 1900 was 755,730, only about 200,000 more than that of Boston.

In London the first fever hospital or hospital for infectious diseases under the charge of the Asylums Board was opened the last of September, 1871, but patients ill with diphtheria were not admitted until the 23d of October, 1888. Since the opening of the first hospital and the others that have been opened from time to time, there have been treated to Jan. 1, 1901, 244,206 patients, 161,646 of whom were ill with scarlet fever; 48,529 had diphtheria. Typhus fever, which is nearly always present to a greater or less extent in England, was represented by 2,351 patients. Typhoid fever, or enteric fever as it is termed in England, caused the admission of 15,632; and there were admitted patients ill with other diseases, 16,048. It is interesting to note the diminution in the death-rate of diphtheria. In 1888 the death-rate from this disease was 59.30%. In 1889 it was 40.74, but there was no marked diminution in the percentage until 1894, when the death-rate was 22.85, co-incident with the use of antitoxin. In 1896 when antitoxin was more generally used the rate was 17.69%. In 1900 the percentage was 12.27. Nine of these fever hospitals in London and one large convalescent home are under the charge of the Asylums Board. They are situated in

different sections of the city, many of them in the outlying portions. All of them are in the centers of large tracts of land, so that they have an abundant supply of fresh air. The names are as follows: The Eastern Fever Hospital, the North Eastern, the North Western, the South Western, the Fountain, the Grove, South Eastern, Park and Brook Fever Hospitals. What immediately attracts a hospital man from this side of the water is the bountiful supply of air space; 2,000 cubic feet to each patient and fifteen feet of wall space. A second thing that also attracts his attention is the number of vacant wards, purposely kept vacant until an emergency arises for their use, or until the time has come to empty a ward for disinfection and renovation; a condition of things that has not been reached in this country. In London nine individuals out of every 10,000 of the population can be provided with good hospital accommodations if ill with an infectious disease.

Previous to 1888 there was no special provision in Boston for the care of patients ill with diphtheria and scarlet fever, but as physicians viewed with dismay the constantly increasing prevalence of these diseases it was decided by the trustees of the Boston City Hospital in 1887 to erect two pavilions for this special purpose. In February, Ward A was opened for the treatment of scarlet fever, and in March of the same year Ward E was opened for the treatment of diphtheria. At first, although the number of cases of these two diseases in Boston was very great, there were comparatively few applications for admissions, but as time went on the public generally began to realize the advantage of sending patients to these wards. After a time these wards became crowded, particularly the scarlet fever ward, so that many applicants were refused admission. So crowded did the scarlet fever wards become in the latter part of 1893 that an application, which was granted, was made to the Board of Health by the trustees of the Boston City Hospital for the temporary transfer of the Epidemic Hospital on Swett Street, now Southampton Street, for the accommodation of scarlet fever patients. This hospital was a temporary wooden structure built in 1892 during the cholera excitement, for use, if there should be any cases of cholera in Boston. The building had never been occupied and would accommodate from 40 to 50 patients comfortably and 60 or 70 when crowded. As the Board of Trustees have always taken the initiative in hospital accommodations for infectious diseases, in Boston, and finding that suitable accommodations could not be provided for scarlet fever and diphtheria in the buildings used for that purpose at that time, decided in 1892 to erect a large hospital for infectious diseases entirely detached from the rest of the hospital, so far as the buildings are concerned, but an integral part of the hospital so far as management is concerned. This department, which is known as the South Department of the Boston City Hospital, was opened for the admission of patients on Aug. 31, 1895. A second very important reason for a separate department was the danger of cross infection, a danger which cannot be overestimated, as hospital experience the world over proves. It was claimed that this hospital for infectious diseases having beds for about 230 patients was too large and that it never would be filled, but as there have been several months when the number of patients reached a daily average of 300, and applicants have been refused admission each year, for want of room, the incorrectness of this opinion has been demonstrated. From the time that the South Department was opened, Aug. 31, 1895, to the 31st of December, 1904, there were 23,275 patients admitted, showing that the advantages of the hospital are appreciated by the public. In no other city in this country is the percentage of patients ill with infectious diseases treated in hospital so large as in Boston, being very nearly as great as in Glasgow and London.

In the twenty-fifth annual report for 1893 of the State Board of Health of Massachusetts an article was published detailing the advantages of isolation hospitals, together with some of the measures which have been taken in other countries for their establishment and maintenance. When the report was written the provision for the separate treatment of infectious diseases in this state was very limited. The continued prevalence of this class of diseases together with the rapid increase of population and of the consequent density in the cities and large towns brought the importance of the subject more and more forcibly to the local sanitary authorities.

In 1894 an act was passed by the legislature bearing on this point. The text of the act is as follows:

ACTS OF 1894, CHAPTER 511.

"SECTION 1. In any city in which no suitable hospital accommodations have been provided for the care and treatment of persons suffering from contagious diseases dangerous to the public health, the board of health of such city may address a communication to the mayor thereof, stating that in the opinion of said board the safety of the inhabitants of the city demands that suitable accommodations should be provided for the reception and treatment of persons suffering from such diseases, other than smallpox and those of a venereal nature. The mayor shall forthwith transmit such communication to the city council, and the city council shall forthwith order such hospital accommodations to be provided, and shall make the necessary appropriations therefor.

"SECT 2. Every city in which hospital accommodations have been provided in accordance with the provisions of this act shall make an annual appropriation for the maintenance of such hospital accommodations, and said appropriation shall be expended under the direction of the board of health, unless otherwise ordered by the city government."

As a result of an investigation of the State Board of Health of Massachusetts in 1899 regarding the existence of hospitals for infectious diseases in Massachusetts, it appears that in ten cities of Massachusetts and in the town of Brookline there is at present provision for the reception of persons ill with infectious diseases except

smallpox. Nine of these hospitals are in cities having a population of over 30,000 each. Four of these are supported by public funds, four by private funds, and three by both. In only three or four of the cities, and the town of Brookline, are the hospitals under the management of the local boards of health. In the other cities the hospitals are managed by independent boards of trustees. All of these institutions with the exception of that in Boston which was opened in 1888, as has been before stated, have been established since 1890. The principal diseases treated in them are diphtheria and scarlet fever. In a few instances patients ill with measles and other infectious diseases are admitted. The entire number of patients treated in these hospitals in 1899 was 3,618; 2,677 being treated at the South Department. There is provision for 404 beds in these hospitals, giving a ratio of hospital accommodations in the state of Massachusetts of 1.39 per 10,000 of the population. In Boston the ratio of hospital accommodations per 10,000 of the population is 3.85.

The cost of building these hospitals was $588,099, and the cost of maintenance in 1899 was $89,420. The occurrence of a case of infectious disease in a family is a serious calamity; not only does it bring hardship and expense, but also the patient becomes a menace to all those around him. The rigid rules of isolation often entail serious loss to a family, both of wages and of the education of the children. For these evils the isolation hospital provides a remedy. The pecuniary saving to the community fully offsets the cost of maintenance.

While much has been done in the establishment of isolation hospitals in the past ten years, much still remains to be done. Many of these hospitals already established are too small, and, therefore, are frequently overcrowded. In some of the cities it has been impossible to obtain a sufficient amount of money to properly construct and maintain these hospitals; the opinions of medical men who are supposed to be the best qualified to judge have been disregarded. When it is taken into account that the population of Massachusetts in 1900 was 2,805,346 and the ratio of hospital accommodations was only 1.39 per 10,000; and that the population of London was 4,589,129 with a ratio per 10,000 of hospital accommodations of 9, it is evident that the citizens of Massachusetts, as a whole, are not fully alive to the advantages of isolation hospitals. It may be said that the population in many portions of the state is sparse, but the truth remains that even in the sparsely settled districts there are certain localities that are very much congested, and may become hotbeds of infection. It is also true that in all the larger cities, and many of the towns there are crowded districts in which infectious diseases are always extremely prevalent.

The power of a local board of health to remove patients ill with an infectious disease, adjudged to be dangerous to the public health, is clearly defined by law. Chapter 80, Section 75, of the Public Statutes reads as follows:

"When a disease dangerous to the public health breaks out in a town, the board shall immediately provide such hospital or place of reception for the sick and infected as is judged best for their accommodation and the safety of the inhabitants, which shall be subject to the regulations of the board, and the board may cause any sick and infected person to be removed thereto, unless his condition will not admit of his removal without danger to his health, in which case the house or place where he remains shall be considered as a hospital, and all persons residing in or in any way concerned within the same shall be subject to the regulations of the board as before provided."

A person ill with an infectious disease living in a house occupied by one family cannot be removed contrary to his wishes, but persons living in hotels, apartment houses and tenement houses can be removed, provided such a removal would not be an injury to them. A house having one general entrance occupied by three or more families is considered in law to be a tenement house and the occupants thereof are amenable to this law. A local board of health, however, must comply with certain forms, which consist of a vote by a board of health and the transmission of the order of the board to a constable duly appointed.

Although what has been said pertains more particularly to the duties of boards of health rather than to city physicians or medical officers of health, yet the officer of health is the agent of the board of health, and is charged with the execution of its orders. A very important part of this officer's duty is the diagnosis of doubtful cases of infectious disease, and he is very frequently placed in positions of grave responsibility where a failure on his part to correctly diagnose a case may be the cause of an epidemic on the one hand, or, on the other, of exposing an individual to infection and depriving him unnecessarily of his liberty. It is no easy matter to make a correct diagnosis of an infectious disease of a mild type and erratic in its nature at the first examination. The well-being of the individual must always be in mind as well as the isolation for the safety of the public.

The diagnosis of smallpox of a mild type is extremely difficult. Measles, varicella, syphilitic eruptions and an eruption due to the iodide of potash have all of them been mistaken for smallpox, and *vice versa*, by practitioners of experience. It is important, therefore, to carefully examine the patient, particular attention being paid to the appearance of the mucous membrane of the mouth and the parts of the body generally covered by the clothing, for in these situations the eruption assumes a more typical form. In measles the diagnosis is generally sufficiently easy, except in the dark-skinned races. In measles the cough, the suffusion of the eyes and the appearance of the roof of the mouth are sure guides to a correct diagnosis. In a severe case of measles it sometimes happens that the papular stage is quite long, and there is a certain amount of hardness around the papules simulating the shotty feeling of smallpox. If the papule, however, is carefully examined, it will be found

to be irregular in form and does not present at the apex a minute vesicle, whereas in a case of smallpox minute vesicles can be seen at the apices of the papules. These vesicles are so small that they are very likely to escape detection, unless the examination is very carefully made in a good light. In the differential diagnosis of these two diseases the temperature is often of great assistance. In measles there is a rise in temperature at the commencement of the attack, and it does not fall on the appearance of the eruption, but remains elevated until the eruption commences to fade. In smallpox, on the other hand, even of the severest type, there is a sudden drop in the temperature coincident with the appearance of the eruption. The general condition of the patient at this time seems to improve, the headache and the pain in the back disappear. It is important, therefore, that an eruption appearing coincident with a fall of temperature should be most carefully scrutinized.

The diagnosis of a severe attack of variola in an unvaccinated person presents difficulties only in the first twenty-four hours of the eruption. A mild case of varicella in a child with a thin and delicate skin is very easily recognized. It is stated by some of the authorities that varicella is an infantile disease, and that it is neither preceded by nor attended with any marked constitutional disturbance. The truth of this statement does not bear the test of experience. An attack of modified smallpox is a comparatively trivial affair, so far as the physical suffering of the individual who has the disease is concerned, but it may be a serious matter to all unvaccinated persons with whom he may come in contact. Because of the mild character of the disease, the difficulty of a correct diagnosis is very much increased. The term "varioloid," too, is calculated to do much harm, not only among the laity, but also among physicians. The word should be dropped from the nomenclature and the term "modified smallpox" substituted. This disease is not like variola, as the word varioloid signifies, but it is variola of a mild type and modified by vaccination.

In common with all acute diseases, a case of modified or unmodified smallpox always commences with a greater or less amount of constitutional disturbance, but frequently in the modified form this is so slight as not to attract the attention of the patient. The same can be said of varicella, although, as a rule, the prodromic stage is shorter. The headache, pain in the back, chills and fever are nearly the same in each of these diseases, differing only in severity and duration. In young children convulsions may be present, although this is not common in varicella, but is quite common in variola. As there is nothing characteristic in the prodromata of these diseases, it is a self-evident fact that a diagnosis cannot be made before the appearance of the eruption. It is claimed by some observers that the pain in the back in variola is so peculiar in its nature and situation that the disease can be detected by this symptom alone. This, however, is purely fanciful, and is of no practical use. In regard to the situation of the eruption, there is no marked difference between the diseases. The fauces, the genitals, the palmar surface of the hands, and the plantar surface of the feet are attacked alike in each disease, although the throat, the palms and the soles are not invaded so frequently nor to such an extent in varicella as in variola. As there is nothing characteristic in the constitutional disturbance, as there is no marked difference in the parts of the body invaded the only sure guide to a correct diagnosis is the appearance of the eruption and its sensation to the touch. In varicella the papular stage is very short, and it is very rarely the case that this stage is seen, but that there is a distinctly papular stage there can be no doubt. In a person with a thick, dry skin this papular stage frequently gives rise to an error in diagnosis. The vesicles in varicella are not full and round as in variola, but frequently have a shrivelled appearance, rupture easily and, when ruptured, empty themselves completely. The base of the vesicle, after rupture, frequently transudes a very little bloody serum. There is no induration, as a rule, about a typical vesicle of varicella, but in a thick-skinned individual a certain amount of thickening, resembling induration, may be found. Great variation in the size of the vesicle is also a marked characteristic of varicella in distinction from variola. When the eruption begins to dry, this process commences in the center of the vesicle and causes an appearance which somewhat resembles umbilication, but which is entirely different from the umbilication of the smallpox vesicle. The appearance and course of the eruption in the palms and on the soles is very different in the two diseases. In varicella the vesicles disappear by the process of absorption or by rupture, while in variola hard, firm disks are formed, which are very gradually removed by disintegration of the integument covering them.

In variola the papular stage is much more marked and of much longer duration than in varicella, lasting from one to three days. At the end of this time a small vesicle, with a minute central depression, appears at the apex of the papule. This central depression or umbilication is pathognomonic of the disease and is never absent. The vesicles now increase in size, are quite firm, filled with a milky fluid, are extremely difficult to rupture, when broken do not empty themselves completely, and are surrounded by a certain amount of induration. At the end of the fourth or fifth day the vesicles are globular in shape, and have lost the umbilicated appearance. The next stage is the pustular, which is ended by rupture of the pustule and the formation of a yellow crust, surrounded by a wall of induration, entirely different in appearance from the black crusts seen in varicella. In smallpox modified by vaccination a portion of the eruption frequently aborts, that is to say, it does not pass beyond the papular stage, but disappears by absorption.

In a syphilitic eruption the absence of any vesicles in the mucous membrane of the mouth and the scaly appearance of certain portions of the eruption will aid in diagnosis. The palmar surface of the hands and the plantar surface of the feet, although frequently presenting a fissured and scaly appearance, do not have the hard, firm disks seen in smallpox. In smallpox, as a rule, the eruption is in very nearly the same stage all over the body, either papules, vesicles or pustules whereas in a syphilitic eruption there may be all the stages in the same individual at the same time.

Eruptions due to iodide of potash have been mistaken for smallpox, but a careful examination shows that this eruption is a pustule on quite a large inflamed base. No vesicle can be detected. There is no eruption in the mucous membrane of the mouth.

It is unnecessary in this paper to advance any argument in favor of vaccination, its protective power being so thoroughly well-established. It is well, however, to appreciate the fact that vaccination eight days after exposure to a case of smallpox does not mitigate the disease. The importance, therefore, of vaccinating immediately on exposure and then forty-eight hours later to repeat the operation so that if the first attempt is not successful the second may be, is evident. It has been demonstrated that if the vaccine vesicle arrives at maturity before the onset of the variolous symptoms, the disease will be modified and in some instances prevented. Well-vaccinated communities never have epidemics of smallpox, as is evidenced by the history of the German Empire.

The diagnosis of a severe attack of scarlet fever after the appearance of the eruption is not particularly difficult. The diagnosis in the pre-eruptive stage is frequently extremely difficult and must be based upon the appearance of the throat, the peculiar redness which is to be distinguished from the appearance seen in diphtheria. In a good light punctæ can be seen in the roof of the mouth, but this appearance must be differentiated from that sometimes seen in health. The appearance of the punctæ in the mouth is similar to that seen on the skin, but there is a difference in the color, the former being of a more brilliant red than the latter. In this stage the appearance of the tongue is of great assistance. The history of vomiting is also an aid, as this is one of the most constant symptoms in scarlet fever. Eighty per cent. of attacks of scarlet fever commence with vomiting. Convulsions are frequently present in young children and rigors in adults. The onset of the attack, as a rule, is sudden, but there may be a feeling of malaise for two or three days previous to pronounced symptoms. A sudden rise in temperature and an attack of vomiting should be notes of warning and should place the physician on guard against a possible attack of scarlet fever. This is of particular importance in diphtheria wards and in wards where non-infectious diseases are treated. The temperature, as has been before stated, is very generally elevated, but a patient may have an attack of scarlet fever with a perfectly characteristic eruption, with only a very slight rise in temperature throughout the whole course of the disease. The following case illustrates this point: A girl five years of age, with her sister seven years of age, was admitted to the diphtheria ward with perfectly characteristic attacks of diphtheria, both bacteriologically and clinically. Forty-eight hours later, without any special rise in temperature, a diffuse punctate erythema appeared on the body. Her sister at the same time had a marked rise in temperature and an equally characteristic eruption of scarlet fever. These patients were immediately transferred to the scarlet fever ward, and each of them desquamated profusely in the usual way.

As a rule, in scarlet fever, the more brilliant the eruption the higher the temperature. In a study of 3,000 cases with regard to the temperature it was found that 102 had a temperature of 99° F., that 411 had a temperature of 100°, 470 a temperature of 101°; in 589 instances the temperature reached 102°; it was 103° in 575 cases; that it was 104° in 484 cases; that in 330 cases it was 105°, and that in 39 instances the temperature was 106°. In 2,487 cases the temperature remained above 100° one day in 414 instances, two days in 558, three days in 498, four days in 315, five days in 204, six days in 153, seven days in 102, eight days in 114, nine days in 45, ten days in 84. The temperature in some cases falls by crisis and in others by lysis.

The history of a typical attack of scarlet fever of an extremely mild form is as follows: The child has a sudden attack of vomiting, complains of a slight headache. After vomiting seems to feel better. Five or six hours later the body is covered with a slight erythematous blush, with a faint punctate appearance. This eruption fades in twelve hours, sometimes in six, and the child is apparently well. There is no isolation, and five or six days later other members of the family have attacks of scarlet fever of more or less severity. If the child goes to school he infects some of his schoolmates. Some few years ago a child in an institution where there were some 150 children had an attack of scarlet fever similar to the one just described, and he infected 25 of the inmates. No physician was called as the child apparently was not ill; the rash was so evanescent that it escaped the observation of the matron. The writer has seen some eight instances of outbreaks of scarlet fever traced to similar attacks of the disease.

The diagnosis of a mild attack of scarlet fever is frequently very difficult, but a careful examination of the throat and an appreciation of the peculiar appearance of the tongue will, in most instances, be sufficient to enable the physician to arrive at correct conclusions. There are cases, however, in which the symptoms are so slight that it is impossible, no matter how much experience a man may have had, to decide definitely for or against the existence of scarlet fever in a given case. The only safe course to pursue is to

isolate the patient for a certain length of time until he either does or does not desquamate, although the absence of desquamation is not absolute proof that the patient may not have had scarlet fever.

The importance of a bacteriological examination in all cases of suspicious sore throat and in all instances where there is a profuse nasal discharge cannot be over-estimated. In no other way can the prevalence of diphtheria be diminished. It is impossible to make a correct diagnosis in nasal diphtheria of a mild type without a culture, notwithstanding the adverse criticisms that have been made by certain members of the profession regarding the accuracy of bacteriological investigations. The medical officer should be competent to make these investigations.

In a paper by Prof. H. C. Ernst, read at the thirty-third annual meeting of the American Public Health Association, the importance of special instruction in medical schools for health officers was strongly emphasized. Foreign countries are very much in advance of us in this particular, and the result is that the investigations of subjects pertaining to public health are on a scientific basis. Much of the work that has been done by local boards of health in this country has been crude and unsatisfactory. It is your duty as health officers, whether members of boards or health or appointed by them, to elevate the standard and increase the knowledge of public hygiene in this country.

The ideal medical inspector should be a well-educated physician, he should have a knowledge of dermatology, he should be a bacteriologist, have a practical knowledge of chemistry, and be an acute and accurate diagnostician. How many of us can fill these requirements?

Clinical Department.

GLANDERS IN THE HUMAN SUBJECT: ITS CLINICAL FEATURES AS SHOWN BY THE RECORDS OF FIVE CASES.*

BY ABNER POST, M.D.

A CASE of glanders has recently occurred in the hospital, under my care, which has illustrated the ease with which the true cause of the symptoms may be overlooked.

Search through the records has discovered only five cases recorded since 1864, the year the hospital first received patients. They are given here somewhat at length, as no other means could better show the varied clinical aspects of the disease. Further, they show that the disease often first involves the lungs in a manner which cannot be distinguished from an ordinary lobar pneumonia. Such an inception would seem from these cases to deserve more emphasis than is given it in the generally received accounts of the symptoms. The cases are given in the sequence in which they occurred, and the clinical details are the only ones emphasized.

*Contributed to the fifteenth series of Medical and Surgical Reports of the Boston City Hospital.

A quotation from Councilman's most admirable article in Wood's Handbook is peculiarly applicable to this series of cases:

"Taken in its entirety the clinical history of the disease, both in the acute and chronic form, is almost characteristic, but at a given period, and indeed for a long time, it may be impossible to make the diagnosis. This is particularly true of the chronic form."

A condensation of Councilman's further description forms a basis for comparison and thus renders these histories more interesting and valuable:

"The skin lesions which are so prominent in the horse appear in man only in the later stages of the disease, and abscesses in the muscles (which are very rare in the horse) are common in man and often constitute the first evidence of the disease. The acute disease begins in man with chills and high fever, which sometimes take a typhoid form. There is often intense pain in the joints and muscles with general weakness and malaise. This condition is followed by the development in the muscles or subcutaneous tissue of hard swellings, which rupture and discharge a thick mucoid pus mixed with streaks of blood. . . . In some cases there is a diffuse erysipelatous inflammation of the skin preceding the formation of pustules, or large ulcers may be formed by necrosis of the skin.

"The nasal discharge is not so marked as in the horse, but an examination of the mucous membrane will rarely fail to show nodules, ulcers and diffuse swelling. The muscle abscesses are usually present. The pustules are most common toward the termination of the disease and often appear only just before death. This acute form is almost invariably fatal, death taking place usually between the sixth and thirtieth days of the disease.

"The chronic form may have a duration of several years. In these cases there is usually an infection from a local lesion of the extremities. Later, abscesses appear in the subcutaneous tissue or in the muscles. In nearly all the chronic cases reported the disease passed into an acute form a short time before death."

The histories show that all these symptoms do not occur in all cases, and that the difference between the acute and chronic cases may be a very marked one. It may be suggested that inoculation may take place through the air passages, the digestive tract, or through a lesion of the skin, and that the early symptoms may differ according to the locus of inoculation.

CASE I. William Curley, Charlestown, twenty-three years old, hostler, entered the hospital on Aug. 11, 1885, in the service of Dr. Forster. Two (2) weeks before entrance had diarrhea, anorexia and general malaise. Five days ago had a sharp cutting pain in the left side. Cough and a full breath still cause pain. There was some headache, nausea, vomiting and slight expectoration. Temperature on entrance 101.2, pulse 108, respiration 24; face bathed in sweat.

Aug. 15. It is noted that there was slight dullness in left chest, with diminished respiration. On the left side next the spine, between the ninth and twelfth ribs, is an area which is tender and slightly bulging. A similar area exists in the anterior axillary line.

Aug. 21. His hand was swollen and there was pain also in left foot.

Aug. 22. An abscess in the left calf was opened, with a free discharge of bloody pus, and a few small pustules were forming. The next day the pustules were

more numerous varying in size from the head of a pin to a small pea.

During this time the temperature had varied between 102.5 and 105.

On the 23d, temperature was 106.5, pulse 146, and respiration 55; and there was a sero-sanguinolent discharge from the nose. More pustules had appeared and their edges were hardened.

The patient was transferred to the surgical service of Dr. Bradford, where he gave the following amended history: About twenty-three days ago began to feel sick. At and before this time he had the care of a horse which was sick and had a discharge from the nose and mouth. Was not careful about his hands, and pulled and scraped away the discharge from the horse's nostrils with his fingers. Was sick in bed four days before entrance on Aug. 11. He showed, on the 23d, profuse perspiration and dried discharge about nostrils.

Condensation of the records allows us to say that pustules began to show, few in number, on the fourteenth day of disease. Subcutaneous abscess had shown earlier. There were present papules, vesicles, pustules, ulcers from rupture of preceding lesions, first round and size of pea, later, much larger and irregular, from the running together of separate ulcers, and surrounded by smaller ulcers.

Died on the 25th, about twenty-five days after the first symptoms. Some time before death a bacillus was found by Dr. Ernst in the discharge from one of the sores, which coincided with the bacillus of glanders. This was probably the first case in Boston in which the bacillus was recognized in the human subject.

At the autopsy an incision in the swelling to the left of the vertebral column revealed extensive infiltration, with pus in the deeper muscular layers, and between the ninth and tenth ribs an opening communicated with the cavity of the thorax. The pleural surfaces on both sides were adherent anteriorly and laterally by numerous fibrous bands. The lungs retracted but little on removal of sternum; were dark in color, denser and less crepitant than usual. On section the surface throughout was moist, rather dark in color, yielding on pressure a large amount of thin, aërated fluid, also here and there drops of pus. The larger and medium-sized bronchi contained thick, muco-purulent fluid; the mucous membrane slightly reddened and injected. In the posterior middle portion of the upper right lobe were two firm, grayish-red nodules, about the size of walnuts showing on section a reddish granular non-aërated surface. (Acute bronchopneumonia.)

Case II. Alden Snell, fifty-four, a livery stable keeper, entered hospital April 30, 1887. Has not been perfectly well since January, when he took cold, but had no cough. After this felt feverish every afternoon. Had been gradually gaining until ten days ago, when he went out of doors. The following night he had severe pain in back and headache. The feverishness returned in afternoon worse than ever. Now complains of general weakness, headache and constipation. Temperature, 102; pulse, 120; respiration, 28. May 4, he began to complain of pain and soreness in muscles of left thigh, and also over the second right metacarpal bone.

He evidently suggested typhoid, as the record reports no rose spots nor enlargement of the spleen.

On the 11th, it is reported that he had failed rapidly, had had a few involuntary dejections and some vomiting, and pain in the legs. There was a slight erysipelatous blush on his nose and right cheek, with marked puffiness of the whole face. Several small pustules were scattered over left arm, face and head, also several small swellings one-half inch in diameter.

On the 12th, copious pustular eruption nearly all over body; a few of the pustules, hemorrhagic.

13th, blebs becoming hemorrhagic. Area of erysipelatous blush not increased in size but much deeper in color, mostly covered with purpuric pustules.

Died on the 14th.

The autopsy report speaks of the eruption as most abundant and largest over face, in places confluent; also seen on anterior surface of the chest, arms and thighs. There was also nodules in frontal region growing from the periosteum, ranging in diameter from 5 to 10 mm., of grayish appearance and red periphery.

The investigation of the nasal cavity from behind showed reddening and injection of the mucosa, also several superficial ulcers with grayish bases and reddened infiltrated edges varying in diameter from 3 to 10 mm. Sections through them showed that they consisted of grayish, rather soft, nodules of new growth, involving wholly the mucosa as far as the bone. Section through the nodules in the skin showed that the superficial portion was a vesicle with fluid lying below epidermis below: this a spherical grayish nodule of new growth varying in size from a hemp seed to a filbert, the larger ones slightly flattened.

The pathological diagnosis was multiple granulomata of the skin, of the pericranial connective tissue and of the nasal mucous membrane. Cloudy swelling of the kidneys. Injection of the spleen. Glanders. No mention is made of bacteriological finding. Duration of disease about three months.

Case III. Abraham Hertzburg, a Pole, thirty-two, merchant, entered the hospital on Jan. 16, 1893, in the service of Dr. Folsom. The patient entered at the end of the second week of his disease, with swelling tenderness and redness of ankles, right knee, left elbow, and wrist and tenderness of left knee and left shoulder.

Scattered over entire body, except the back, were numerous large and small vesicles, surrounded by a reddened zone, and numerous pustules and papules, some scales and crusts. Eruption increased rapidly in number of pustules and size of crusts. Respiration became labored. There was a slight purulent discharge from one nostril and a beginning edema of both eyelids, and he died Jan. 18. There was no autopsy and no record of any bacteriological examination. There was no mention of possible sources of infection.

Disease lasted about sixteen days.

Case IV. Nathan W. Ward, fifty-nine, letter-carrier. "Has recently been in contact with glandered horses."

Entered the hospital Oct. 29, 1904. Six days previous, had had a sudden chill, lasting one hour, followed by sweating and fever. Vomited several times the first day, not since. Pain at once set in in right chest; worse on deep inspiration, slight cough. Expectoration slightly blood-tinged. On entrance, pain in side severe, prostration considerable, temperature 104, pulse 115, respiration 45. Considerable dyspnea, slight cyanosis.

Left lung showed slight dullness at base in axillary line with broncho-vesicular breathing, no râles.

Right lung showed dullness, becoming flatness below fourth rib in front, and flatness behind and in axilla from angle of scapula to base. Over this area intense bronchial breathing with increased vocal and tactile fremitus and ægophony. Marked increase of whispered voice sounds. Many fine and subcrepitant râles.

Nov. 1. Signs of consolidation had diminished, but temperature continued about 104, and the pulse had risen to 140. The first mention of cutaneous lesions occurs in the notes of this day to the effect that two days previous the little finger of the left hand showed redness, swelling and tenderness. One small pustule appeared on the right hand and two on the neck. Twenty-four hours later the left foot was swollen and red, the big toe bluish. Pustules appeared on the

left upper arm. Since then these have spread. They are diffusely scattered, varying in size, irregular in shape with a sero-purulent discharge.

Seen by two consultants one of whom gave a diagnosis of impetigo contagiosa, the other of septicemia.

Nov. 2. Skin lesions multiply rapidly. Patient died at 7.30 A.M.

Disease fatal in about ten days.

Autopsy. — Dr. Wolbach's description of the external surface is extremely interesting.

The whole body, including face and scalp, is covered by an eruption, macular, papular, vesicular, pustulas. Papules are small, brownish in color, from 1 to 4 mm. in diameter. Pustules vary from a few mm. to one cm. in diameter and are umbilicated. In places there are ulcerations surrounded by vesicles, the whole upon elevated, dark-red indurated bases. These lesions are most numerous over the chest, sides of the neck, upper arms and thighs. Are thinly scattered over lower legs, forearm, face and scalp. On left frontal eminence is an ulceration one cm. in diameter surrounded by vesicles. Over right eminence are two similiar ulcerations upon a common elevated base. On right temple is an irregular ulcerated area 3 by 4 cm. also surrounded by vesicles. On right upper arm are several smaller lesions. Over right zygoma, a conical-shaped pustule, one cm. in diameter at the base. The lesions on sides of the neck are mostly pustular. The lesions on sides of chest and over lower legs and forearms are papular. These papules are hard to the touch. Over both radii in the upper third of the forearm are abscesses, each containing about forty cc. of thick sanguinolent purulent matter. Over anterior aspect of thigh is a smaller abscess. Little finger of right hand is swollen and dark reddish in color. Left little toe similar.

Autopsy findings:

Resolving pneumonia (right).
Fibrous pleurisy (right).
Abscess of lung (right).
Multiple subcutaneous abscesses.
Pustular and papular skin lesions.
Acute hemorrhagic leptomeningitis (right).
Acute cellulitis of the scalp.

The bacteriological examination of Duval and Lewis [1] showed that the blood culture taken two days after admission yielded a pure culture of B. Mallei. Cultures from the abscess of the lung, the scalp and the arms and thigh showed B. Mallei mixed with streptococcus pyogenes and staphylococcus aureus.

The following case, the last one in the sequence, is my own and furnishes the excuse for putting the other cases together. It is decidedly a chronic case and is not yet finished. It lacks the striking phenomena of the previous acute cases but there is similarity between the subcutaneous abscess in this and some of the preceding cases.

CASE 5. It is somewhat remarkable for the slight character of the symptoms and the difficulties of the diagnosis. It has led to the study of the previous cases and is put on record in the hope that it may help in the recognition of other cases. This patient had no discharge from the nose, no eruption on the skin, and was not especially sick.

Jeremiah Barry, twenty-two, 21 Austin Street, entered the hospital on Jan. 29, with a small indurated and tender spot on the outer posterior aspect of the left leg, and a small fluctuating tumor, size of a walnut, over the upper portion of the sternum. The patient was convalescent from a pneumonia three weeks previous. He had a temperature of 102 and a pulse of 100. The abscesses were opened under ether the next day. They contained a bloody, purulent fluid. The one in the leg was reported as containing streptococci and that over the sternum as sterile. The temperature fell to 100 and the pulse to between 80 and 90.

The middle of February the little wounds were still unhealed, other small areas of tenderness had formed and the temperature was still running about 100. The first of March still other foci had shown themselves, the temperature had shown some slight decrease but the patient was still in bed, somewhat listless and indifferent.

The abscesses were characterized by slight tenderness and very little swelling, and their contents were thin, bloody, with little pus. They were not frankly inflammatory. They were tender rather than painful. After opening and cleansing they showed little tendency to heal.

About the middle of February it was remarked that the slight abscesses were not healing in normal fashion; that new abscesses were constantly forming; that these abscesses were not frankly purulent, but were somewhat peculiar; that there was continuous elevation of temperature and languor greater than the local lesions would explain. It was evident that there was some serious constitutional condition of which the clinical expressions were those mentioned above. No organic internal disease could be discovered. The blood was cultivated without result. The question was then raised whether it was possible that the patient was suffering from glanders, as something answering to the bacillus had been found, but it had failed to give the characteristic reaction in the guinea pig.

With that hint, the patient gave us a history of great value, somewhat as follows: He was a longshoreman, but work being slack he had obtained work in a large stable where he had worked for a week when he was taken down with pneumonia. During that week he helped in the care of twenty-one horses. Two horses, not directly under his care but into whose stalls he had been, were killed by the Board of Health for glanders.

The patient was sick with "pneumonia" for three weeks when he returned to the stable, but in a few days the abscesses obliged him to give up work.

With this history in view, further bacteriological research was undertaken, and the undoubted existence of glanders demonstrated.

The patient continued to develop abscesses but improved greatly in general condition and was discharged from the hospital early in June. His condition since leaving the hospital is unknown. This case illustrates the fact that the surgeon cannot rest the responsibility of diagnosis upon the pathologist alone.

This case has lasted about nine months.

When clinical surgeons are obliged to depend upon others for pathological and bacteriological work, it is evident that they must know what sort of pathological or bacteriological process is capable of producing the symptoms which attract their attention, that they may indicate the character of the research to be undertaken.

Three of these five cases had definite symptoms of involvement of the lungs and another complained that his trouble began with a cold. So far as these few cases have weight, it would seem that an initial pneumonic process must be more frequent than is usually believed.

[1] The Journal of Medical Research, August, 1905, page 54.

AN ARTERIO-VENOUS ANEURISM OF THE THIGH.*

BY HERBERT L. BURRELL, M.D.

THE treatment of deep punctured wounds will always be of interest. The depth of the wound is not known, the wound is difficult to sterilize, and important structures may have been divided which require repair, and in some instances prompt action is necessary to avoid serious and even fatal complications.

Practitioners know that deep wounds, in which important structures have not been divided, if cleansed moderately thoroughly, frequently do well. The temptation, is, therefore, to wash out the wound with an antiseptic and not to lay open the depth of the wound.

In many cases a probe is still used with the belief that it will give important information. A probe will insinuate itself between planes of muscles and entirely mislead as to the depth and extent of the wound; it certainly cannot reveal a divided nerve, artery or vein; it may reveal roughened bone or the presence of a metallic foreign body, but it certainly cannot determine whether dirt, either macroscopical or microscopical, is present. The use of a probe in such wounds is a tradition. Why this tradition maintains is difficult to understand, yet it does, and often misleads the practitioner.

The following case exemplifies some of the difficulties which attend the treatment of a punctured wound of the thigh in which an arterio-venous aneurism formed:

Stab wound of thigh; insufficient exploration of wound; development of an arterio-venous aneurism; operation, — ligature, proximally and distally, of femoral artery and femoral vein, and excision of the arterio-venous aneurism; continued hemorrhage, ligature of one of the deep perforating veins, control of hemorrhage; recovery.

J. M., forty, S., entered the hospital Dec. 24, 1904. The patient's family and previous histories were negative. Present history: While drunk, jabbed a pocket-knife into his left thigh. Physical examination: On entrance patient was almost exsanguinated; radial pulse very weak; incised wound one and a half inches long on inner part of left thigh, which admitted a probe for about two inches; entered with tourniquet on thigh; no fresh bleeding followed its removal; wound cleaned, partially closed and drained. Dec. 28. Circulation good; drain removed. Jan. 1. Wound showed evidence of infection, and there was a marked palpable thrill over the wound area. Jan. 5. Thrill and forcible pulsation more marked. Jan. 6. Operation.

Under ether an incision 14 or 15 cm. in length was made at the middle of the left thigh, a finger's breadth outside the femoral vessels. The knee was bent and the leg rested on its outer surface. A tourniquet was about the upper part of the left thigh ready to be tightened. The outer border of the sartorius was distinguished from the vastus internus and the muscle was drawn inwards. This exposed the sheath of fascia, Hunter's canal, which extends from the vastus internus to the adductor magnus and longus. This sheath was opened about 5 cm., and the femoral artery, femoral vein and the internal saphenous nerve were identified. A silk ligature was placed around the femoral artery, but was not tied. A point was then found where the fascia, forming Hunter's canal, the artery and the vein had been injured, for these structures were matted together, and a point of cicatrix existed from which a hemorrhage obviously might readily occur. This matted-together point on the artery and vein was carefully separated by dissection, when suddenly there came a gush of arterial blood, perhaps the size of a lead pencil. It was obvious that any attempt to suture the artery or the vein would be futile, owing to the irregularity of the cut and the gluing together of the tissues. Therefore, the temporary ligature which had been placed in position on the femoral artery was tied. The hemorrhage still continued, but could be controlled by the tip of the forefinger. The femoral vein was then carefully isolated and ligated distally to the injury. On removing the pressure from the injured point on the two vessels, the hemorrhage still continued and was more arterial in character. With the finger making pressure on the bleeding point in the vessels, a dissection was now made to demonstrate the anastomotica magna. This was abandoned and the artery and vein were ligated *en masse*, about 5 cm. apart, just above and below the injury to the vessels. The ligated mass was excised. The hemorrhage still continued to come from the deep tissues. The finger evacuated a cavity which held about 120 ccm. of blood clot, which was on the adductor magnus muscle and extended to the femur. Some of the blood clot was old, some was recent. Finally, a wound was found in one of the deep, perforating veins near the femur, from which blood was pouring. This being secured, all hemorrhage ceased. The blood-clot cavity was packed with gauze and a sterile wick placed in the original wound. The wound was closed with catgut approximating muscles, and silkworm-gut in the skin. The limb was elevated, and a bandage was applied from the toes upwards. Heaters were placed about the limb.

Jan. 10. Wound discharging; opened and irrigated; circulation in thigh remains good. Jan. 14. The condition is the same, but there was slight bleeding from the wound to-day. Feb. 1. Discharge has ceased and wound is granulating. Feb. 21. Four days ago over the left heel there was found a black, necrotic area about the size of a silver dollar; no suppuration; there was some anesthesia of skin about this area; no tenderness; the wound was discharging slightly. Patient was discharged to the Surgical Out-Patient Department. Eventually the slough separated and the wound granulated. Whether this granulating area closed in later is not known.

Comments. — When the wound was first seen it was cleaned and probed; it should have been thoroughly opened and the wounded blood vessels secured. The difficulties associated with the operation were very considerable. Suppuration was present, and the connective tissue which

* Contributed to the fifteenth series of Medical and Surgical Reports of the Boston City Hospital.

matted together the artery and vein could not be distinguished from the walls of the vessel. The continuance of the bleeding after proximal ligation of the artery and distal ligation of the vein was perplexing, and was due to blood coming through the anastomotica magna. The continued persistence of the bleeding after proximal and distal ligation of both artery and vein was most disturbing, but was readily understood when the blood clot which was beneath the vessels was cleared away, and the wound in the perforating vein was recognized.

There can be no question that the earlier an arterio-venous aneurism is operated, the better. In the light of my experience it seems that unless a wound of an artery and vein is operated on very early, suture of these vessels will rarely be feasible. Ligation of the divided vessels may be tried, but probably excision of the aneurism will prove to be the best and safest treatment. When seen early, suture of the vessels, if they are of sufficient size, should undoubtedly be tried, but frequently ligation will eventually be necessary. The operation should be undertaken with the clear understanding that it may tax to the utmost the anatomical knowledge, accuracy, and thoroughness of the operator. A free exposure of the injured vessels is imperative to intelligently treat this most serious injury.

STONE IN THE URETER. REPORT OF A CASE.*

BY JOSHUA C. HUBBARD, M.D.,
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F. S., male, a resident of Boston, forty-eight years old, single, entered the Boston City Hospital July 7, 1905. He was born in Sweden. His family and previous histories were both unimportant. For two days previous to his entrance he had had pain in the right side of the abdomen extending to the back. The pain tended to shoot upward and was increased by moving. While the pain had periods of exacerbation it never entirely left, but persisted as a constant dull ache. There had been no vomiting. The bowels were regular. He had had pain every other day in the prostatic region during micturition.

Physical examination: Temperature on entrance 100, and pulse 62. Well developed and nourished. Pupils equal and reacted normally. Tongue protruded straight. No general glandular enlargement. Knee jerks normal. Heart and lungs normal. Leucocyte count 12,000. The examination of the abdomen was negative except for considerable tenderness in the right loin and on the right side along the course of the ureter down to McBurney's point. When seen during the next morning at the ward visit there was no spasm of the abdominal muscles though the pain on the right side and in the back persisted. Midway between the spine of the ilium and the border of the ribs was a tender area. At the same level in the back to the right of the spine was a second tender area. There was nothing palpable at either place.

A urine examination was first reported on July 9, when it was normal; 1024; pale, acid, without albumen or sugar.

For the next few days the condition remained unchanged and then came during the night an attack of pain in the right side of the abdomen with nausea and vomiting. By the next morning the attack had subsided though the temperature had risen to 100.8 and the pulse to 75. The condition of the abdomen remained as before.

As the diagnosis seemed to lie between a rather mild type of retrocecal appendicitis and a renal calculus it was thought best to explore the abdomen and be guided in operating by the findings.

July 11. Operation. Ether.

Incision through the fibres of the right rectus muscle. Peritoneal cavity opened. Cecum pulled up into the wound. Appendix identified. Its mesentery tied off with silk. Pursestring suture passed in the cecum about the base of the appendix. Appendix divided between clamps. Stump touched with 95% carbolic acid and alcohol and inverted into the cecum. Pursestring suture tied and reinforced by one or two Lembert sutures. Appendix short and without any evidence of past or present trouble. Upon exploration of the abdomen a small mass about the size of a large bean was felt in the right ureter. The abdominal incision was closed by through and through sutures of silkworm gut and the patient was placed on his left side on sand bags. An incision was made downwards from the last rib on the right. The perirenal tissue was opened and the kidney identified. The ureter was followed downward to about an inch and a half from the lower pole of the kidney where the stone was felt. In order to reach this satisfactorily some of the muscles fibres arising from the crest of the ilium had to be divided. The ureter, held up between fine snap forceps, was incised and the stone was removed with some difficulty it was so firmly wedged in. A probe was passed down the ureter to the pelvic brim and upward to the kidney without finding any other stone. The incision in the ureter was closed by several fine silk sutures. The divided muscle fibres were sutured except where a gauze wick was left to the suture line in the ureter. The skin incision was partially closed. The stone removed weighed ten grains. It was somewhat triangular in shape with a generally nodular surface.

After the operation the temperature gradually fell to normal on the third day from which time it never rose again above 99.4. Immediately following the operation the urine passed by the urethra was bloody but that examined on July 13 was 1022, pale, alkaline, and contained no sugar or albumen. Some microscopic blood appeared in the specimen examined on July 15. There was some leakage from the suture line in the ureter for urine escaped from the wound in the loin requiring at first frequent changes of the dressings. The sinus healed, however, very rapidly and was

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only an inch and a half deep on Aug. 6, when the patient was discharged from the hospital. Following the operation the patient complained at intervals of pain in the loin which gradually decreased. Following his discharge from the hospital the dressing was done in the Out-Patient Department till Sept. 7, when the sinus was entirely healed and he was discharged feeling perfectly well and strong.

Medical Progress.

RECENT PROGRESS IN OPHTHALMOLOGY.

BY MYLES STANDISH, M.D., BOSTON,
AND
WM. DUDLEY HALL, M.D., BOSTON.

A BACTERIOLOGICAL STUDY OF TRACHOMA.

Arnold Knapp, M.D.,[21] during the preceding two years has examined 120 cases of trachoma, the symptoms of which had not been sufficient to draw attention to the lids. The retrotarsal folds were thickly studded or densely infiltrated with follicles, which in some cases encroached upon the tarsus. There was very little secretion, the conjunctiva was but slightly thickened and moderately red. They were the kind that are regarded by some ophthalmologists as relatively benign and amenable to treatment, which was the case generally, although two of them, notwithstanding treatment, went on to the condition which generally precedes pannus. The follicle contents were examined by many staining methods and cultivated on a variety of nutrient media with the only result that in four cases an influenza-like bacillus was found. L. Müller has found this bacillus in trachoma in 59 out of 155 cases and more frequently in recent cases and has never found it in non-trachomatous cases. Culturally and morphologically it cannot be distinguished from the influenza bacillus, still he does not regard it as identical with it, as no other symptoms of influenza were present. It is a very short, small bacillus, dull outline, rounded ends, stains with difficulty, but best with carbol-fuchsin. Gram negative. Grows exclusively on hemoglobin, appearing from twenty-four to forty-eight hours as small, clear colonies only seen by a magnifying glass. Increased development when near other colonies with alkaline reaction. Animal experimentation negative. With the intention of testing Müller's results the secretion was examined in about forty cases and the influenza-like bacillus was found in four, and agreed in all respects with the one described by Müller, and called by him the trachoma bacillus. Acute epidemic conjunctivitis was noticed as a complication, but in no case were the Koch-Weeks bacillus and the Müller bacillus found associated. The influenza group as far as the conjunctiva is concerned may be said to comprise the influenza bacillus, the pseudo-bacillus and Müller's bacillus, providing his statements are accepted. The Koch-Weeks bacillus is regarded by some as identical with the influenza bacillus, although probably not, as it is larger, more sharply defined and grows best on serum agar, while the influenza bacillus requires a media containing hemoglobin. The Koch-Weeks colonies are opalescent and bluish while the influenza colonies are transparent and like dew-drops. The former are maintained with difficulty, whereas the influenza organism may be cultivated indefinitely. He believes that an influenza-like bacillus identical with the Müller "trachoma bacillus" was present in eight out of one hundred and twenty fresh cases of trachoma; that it could not be differentiated from the true or pseudo-influenza bacillus, morphologically, culturally or by animal experimentation; that its presence in these cases was probably accidental; that there is an influenzal conjunctivitis without other symptoms of influenza and that the Koch-Weeks bacillus is not identical with the influenza organism.

ULCER OF THE CORNEA FROM STREPTOTHRIX.

DeBerardinis,[22] in studying bacteriologically the origin of corneal ulcers, noticed some cocci in chains or singly, but which he thought of little account. Later, however, he was shown a form of streptothrix which had been isolated from a pulmonary abscess that morphologically resembled the germs he had so often observed but had not given particular attention. By inoculation of the pure culture or of the secretion collected from experimental ulcers of the cornea of other animals he succeeded in reproducing in rabbits a typical corneal ulcer so frequently observed in the clinics. As a rule the ulcerative keratitis which follows, even if severe, rarely destroys the eye by suppuration of the internal membranes and the resulting leucoma is usually insignificant. From the condition of the membrane of Descemet and the changes in the iris, he believes that the hypopion originates in the iris. He is also of the opinion that the streptothrix is the cause of ulcers frequently that have been ascribed to other micro-organisms.

CONJUNCTIVITIS PETRIFICANS.

Posey,[23] who has recently observed this condition, briefly reviews Leber's description of the disease. It is characterized by irregular white opaque spots, slightly elevated and covered with epithelium. They occur anywhere in the conjunctiva and may even extend to the bulb, and lid tissue. They cause but little discomfort unless the cornea suffers by mechanical irritation. After a few weeks of inflammation symptoms subside and the conjunctiva may become normal. After several recurrences the spots are seen to coalesce, the deeper tissues become involved and large chalk-like areas appear in the lid. These masses are very hard and brittle. The condition is chronic. No bacillus has been isolated. The deposit was composed of lime, either as the carbonate or phosphate.

EPITHELIAL PLAQUES OF THE CONJUNCTIVA.

Lister [24] describes four cases. They are small, slightly elevated, freely movable tumors. They are usually found on the cornea or at the limbus.

If brittle, from time to time bits break off causing irritation similar to that of a foreign body. Age and sex seem to have little effect in determining their origin. They are pale white in color and do not have the elevated margin as is seen in epithelioma of the cornea. They are found to consist of a thickened layer of epithelium which gradually merges into the normal conjunctiva and seem to be related to callosities of the skin due to hyperplasia of the horny layer.

TREATMENT OF TOBACCO AMBLYOPIA.

Mr. Wray [25] divides his cases in three groups: 1, those with amblyopia only; 2, those with amblyopia and tachycardia, and, 3, those with tachycardia only. In view of the possibility of heart failure the pulse should be carefully watched as the frequency may range between 95 and 135. If taken early enough the amblyopia usually disappears, but the period is apt to be long. The tachycardia may persist for years after the tobacco has been given up. The so-called toxic breath is always present with the amblyopia, but never when the tachycardia is the only symptom. He considers the amblyopia as probably due to saturation of the blood with the tobacco alkaloids, and the tachycardia as due to injury or destruction of the cardio-inhibitory neurons of the trachea and bronchi. Not being satisfied with results from strychnia and iodide of potash and in view of the solubility of nicotine in water, patients are directed to dress warmly, drink a pint of water at 7 A.M. and walk briskly for twenty minutes in the open air. Then drink a second pint and take a similar walk. After a short rest have a breakfast. A third pint to be taken in the middle of the forenoon and a fourth during the afternoon. Some of the patients have used one-quarter ounce each day during the treatment for smoking. The water treatment did not seem to have any especial effect upon the heart.

THE HYGIENE OF SMOKING.

Bamberger,[26] in considering the dangers arising from the abuse of tobacco, thinks that a discrimination should be made between those who use a holder or simply allow the cigar to rest between the lips and those who allow the tip to become wet with the saliva. The latter class receive into their system much more of the dry distillation products, nicotine, pyridin, ammonia, etc., as they collect in the wet end of the cigar in concentrated solution. Alcohol used even in moderation acts as a vehicle for the poisons and aids greatly in their absorption. On the other hand, the "dry smoker" endangers his health relatively little. The danger from cigarettes is due to the large number used and the probability of inhaling the smoke. Chewing seems to be not especially harmful as this form of tobacco contains but little nicotine and there is absence of the products of combustion. Tamponing the holder with cotton soaked with chloride of iron has the double advantage of holding these deleterious products back, and it is said, *very much improves the flavor of a very bad cigar.*

ADRENALIN.

DeBeck [27] calls attention to the possibility of grave complications following its use by describing a case of his own, — an ordinary syphilitic plastic iritis with broad synechia which resisted the energetic use of atropine. As there was a good deal of redness and lest the "red eye" might prevent the patient attending an important business meeting, a 1-1000 solution was used cosmetically with success. On the following day, however, the anterior chamber was half full of blood. Pain came on within an hour after adrenalin was instilled and vision immediately began to fail. Absorption was rapid and the final result did not seem to indicate that the eye had suffered material damage from the use of the drug; in other words, its progress to recovery was about as rapid, after the disappearance of the blood, as it had been before. Bouchart [28] operated for squint using avasin (mixture containing cocaine and adrenalin) and on the eighth day noticed an interstitial infiltration of the cornea, turbid, aqueous, diminished vision and dilated pupil. Eserin was used. After two months, during which treatment had been discontinued, the infiltration was stationary, pupil dilated *ad maximum*, iris dull and pale (like an old glaucoma), vision 1-10, and tension normal. Later, the pupil became smaller, but the iris showed degenerative changes and the vision remained poor. Although the second eye was operated upon under about the same conditions no ill results were noted. Treutler,[29] as a matter of experiment, in a case of rheumatic iritis with a practically excluded pupil, which had improved under diaphorhesis, aspirin, heurteloupe, scopolamin and suprarenal extract, discontinued the extract, and, on the following day, one hour after the use of scopolamin an acute glaucoma supervened. Tension became + 2, cornea steamy, and there was severe pain. It is stated that one drop of the extract gave almost instant relief. The success of the after-treatment, which was conducted without the use of scopolamin, but with the careful use of suprarenalin, would rather tend to confirm the claim of Wessely, based upon animal experimentation, in regard to the favorable action of this extract in cases of iritis with increased tension.

EUSEMIN.

Cohn [30] has used this mixture of cocaine, adrenalin, chloretone and physiological salt solution as an anesthetic in many operations upon or about the eye. It has likewise been used extensively in dental surgery with very satisfactory results. He found it to be particularly well adapted to conditions such as cysts of the lid, cutaneous horns, conjunctival cysts and chalazia. He is in the habit of slowly injecting it into the meibomian cyst by way of the conjunctival surface of the lid and the operation is practically without pain and bloodless. In this mixture much less cocain may be used and the diminished absorption due to the adrenalin renders the local anesthesia less toxic, but more profound and of longer duration.

THE EFFECTS OF MODERN LIGHTS UPON THE EYE.

Staerkle [31] determines experimentally the effects upon the eye of the various kinds of lights in modern use. There are three kinds of light rays: (1) so called heat rays with velocity of over 170,000,000,000 undulations per second, the ultra red, invisible, dark and long undulations. (2) Luminous rays, red-violet of the spectrum. (3) Ultra-violet rays, invisible, of short undulation, reactive or chemical. His conclusions are that the injurious effects of light upon the eye increase with the number of short undulation rays contained. The various lights in use are arranged as follows, according to the proportion of short undulation rays said to be contained therein: Petroleum, gas light, electric light, auerlicht, acetyline. Petroleum is, therefore, the least harmful. The short undulation rays can be diminished by passing them through thick glass of certain colors.

PROGNOSTIC IMPORTANCE OF RETINAL LESIONS IN NEPHRITIS.

Elschnig [32] by examination of the fundus in 199 cases of retinitis has found that when typical retinitis was present 23% died within six weeks and 31% within six months. When retinochoroiditis was present all died within six weeks.

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Reports of Societies.

AMERICAN LARYNGOLOGICAL ASSOCIATION.

TWENTY-SEVENTH ANNUAL CONGRESS, HELD AT ATLANTIC CITY, N. J., JUNE 1, 2, AND 3, 1905.

FIRST DAY, THURSDAY, JUNE 1.

THE meeting was opened with an address by the president, DR. CLARENCE C. RICE of New York, reviewing briefly the history of the Association and the work of its noted members.

The first paper of the scientific session was

PARTIAL TURBINECTOMY FOLLOWED BY ACUTE OTITIS, MASTOIDITIS, SIGMOID SINUS THROMBOSIS, WITH EXTENSION TO INTERNAL JUGULAR VEIN.

DR. CHAS. H. KNIGHT and JAS. P. MCKERNON of New York: First calling attention to the very small number of serious results following so-called minor operations in the nose (and probably not all of those reported) with the result that we all of us are likely to lose sight of the possibility of their occurring at all, the authors reported in detail a case of nasal obstruction caused by a spur on the septum, and a cystic enlargement of the middle turbinated bone.

The anterior end of the turbinated bone was removed, under cocaine and adrenalin, by cold snare and cutting forceps. The nose was not packed.

On the fourth day an otitis media developed, and later, in succession, a mastoiditis, lateral sinus thrombosis, with infection of jugular vein, making necessary a complete mastoid operation and opening of the sinus, and removal of jugular vein from skull to below the clavicle.

On pathological examination, the walls of the vein, and the lymph nodes in the neck, were found infiltrated with streptococci, showing the necessity of *removing* the vein, and not merely opening it and washing out the infected clot. The patient reacted well after the final operation, and recovered.

FURTHER REPORT OF A CASE OF LUPUS OF THE PHARYNX AND NASOPHARYNX.

DR. HERBERT S. BIRKETT of Montreal: The writer referred to his report of the treatment of this case by x-rays, at the meeting of the Association in June, 1904, and stated that the patient reported to him, merely for examination, in December, 1904, having, however, no subjective symptoms. He then found that the areas previously treated, pharynx, nasopharynx and cartilage of the septum, had remained absolutely healed; but found that the epiglottis and a small portion of the posterior pharyngeal wall showed the presence of the same disease, but in entirely new areas. X-ray treatment was again begun at once, and now in June, 1905, the lesions are almost healed.

Without claiming too much for the treatment, he felt that it warranted trial in all such cases, especially as other methods had proved so unsatisfactory.

THE TREATMENT OF ACUTE INFLAMMATIONS OF THE NASAL ACCESSORY SINUSES.

THOMAS HUBBARD, M.D., of Toledo, Ohio: The writer stated that there was no sharp line between acute catarrhal and acute purulent inflammations of mucous-lined cavities; and that virulence of infection and systemic resistance (especially the latter), rather than the specific character of the infecting agent, were the determining factors, particularly when chronic catarrhal conditions already existed; and also claimed that an abundant purulent or muco-purulent discharge was, in general, an indication of sinus infection, excepting in such diseases as diphtheria, gonorrhea, or erysipelas of the nares.

In many cases where the development of the sinus disease depended upon the systemic condition, he felt that appropriate general systemic treatment was really of more importance than the local.

The author discussed at length the usual symptoms of acute sinusitis, and spoke particularly of the general hyperemia of *all* the sinuses, so frequently found, when *only one* of them was really infected. This, he felt, was a physiological flushing to prevent further infection as micro-organisms cannot invade a mucous membrane when this flow is established; and gave us the primary indication for treatment, viz.: to promote this flushing in the true acute sinusitis.

But this flushing action, is overdone by the mucous membranes, in the neuropathic, vaso-motor conditions, which sometimes simulate a real sinusitis; and these require a very different, in fact opposite, plan of treatment, viz.: vaso-motor tonics, such as strychnine, atropin, opiates, dry heat, etc., with the idea of checking secretion, and here the author emphasized what to him seemed a very marked and very frequent "therapeutic indiscretion," that of using the various "coryza" and "rhinitis" tablets, which contain quinine, atropin, morphine and camphor, in acute coryza. These are all indicated in conditions of vaso-motor instability, but not in actual inflammatory conditions of the nares and sinuses.

The author recommended a careful general hygienic

regimen, saline catharsis, full doses of potassium bicarbonate, application to the whole face (protecting the eyes) of hot wet poultices, repeating every two to four hours, to stimulate the above mentioned flushing.

Locally he condemned the general use of nasal douches and heavy sprays claiming that few could use them without danger of damage to the ears. Instead of these, if washing of the nose was desired, he advised the use of warm normal salt solution, with a little cocaine or adrenalin and menthol and carbolic acid in it, applied gently with a fine spray apparatus, or by putting the nose in a glass full of the solution and drawing it up by suction into one nostril at a time.

Direct irrigation of the sinuses he said was rarely indicated, but might be necessary, if the condition did not yield to the above treatment in reasonable time, or if the discharge became distinctly purulent and malodorous. In many cases the sinuses can be irrigated through the natural openings; if not, then an artificial opening must be made.

AN INTRA-NASAL OPERATION FOR DRAINING THE FRONTAL SINUS.

E. FLETCHER INGALLS, M.D., of Chicago, Ill.: After discussing the objections to the usual radical operations by external incision for the cure of chronic frontal sinusitis, the author gave full histories of several cases in which he had operated by an intra-nasal method, showing the instruments used and describing the method in full, it being applicable only to those cases where a probe can be introduced into the sinus.

The instrument consists of a steel pilot from 1 to 2 mm. in diameter; a hollow burr attached to a flexible hollow wire cable, which in turn is attached to a hollow steel tube which has a shank for connection with the chuck of a dental engine; also a spinal flexible steel tube which fits over the cable of the burr, to protect the nasal mucous membrane when the instrument is in operation.

A hollow gauze packer is used for packing and cauterizing the cavity, and a self-retaining gold drainage tube, with an internal caliber of 5 mm., is used for continuous drainage to be left in for a few weeks, or sometimes for a few months.

The method of procedure was to wash out the sinus, and apply cocaine and adrenalin; then the pilot is passed into the sinus, the hollow burr over it; and the spiral "protection tube" over the cable of the burr; the cabie is then attached to the chuck of the dental engine; and then when ready for operation the patient is anesthetized with ethylchloride (two minutes) and the current turned on; the burr is gently pressed along the pilot, entering the sinus in a few seconds.

Then the instrument is withdrawn and the sinus packed for a few minutes to control the slight hemorrhage, and then cauterized with pure carbolic acid; and then the gold drainage tube is introduced, and left for some weeks, or months as may seem advisable. The author summed up with the following conclusions:

I. This operation can be safely, quickly and easily done in cases where a probe can be passed into the sinus.

II. It establishes free drainage and a means whereby the patient can, without aid, wash out and medicate the sinus as desired.

III. No hemorrhage is possible which cannot be easily checked by packing, excepting, of course, in cases of hemophilia.

IV. The pilot prevents perforation of the cerebral wall of the sinus.

V. The patient's consent can be obtained for this operation much more easily than for the opening through the eye-brow, and thus many cases may be cured in their incipiency, which would otherwise prove very tedious, and ultimately demand a more serious operation.

VI. This operation would probably be curative in nearly all cases of acute purulent frontal sinusitis, and

VII. In a large percentage of chronic cases.

VIII. It will be a valuable preliminary to the radical operation in practically all cases; and,

IX. It should be recommended in all suitable (*i. e.*, probeable) cases, in preference to the open radical operation; for even if a cure does not result, conditions will be improved *for* the radical operation later.

DR. JOHN M. INGERSOLL of Cleveland, Ohio, showed a large number of sections of the nose, in various animals, photographs of which and a paper on which he presented at the last meeting.

They constituted a very interesting and valuable study in comparative anatomy.

SYMPOSIUM ON SINUS DISEASE.

Discussing:

A. What symptoms in diseases of the nasal sinuses demand radical surgical intervention?

B. What have been the comparative results of conservative and radical methods of treatment?

I. THE MAXILLARY SINUS.

DR. ROBERT C. MYLES of New York read the first paper of the discussion. He said that in his opinion radical surgery should be employed in nearly all cases of exposed bone necrosis beneath the periosteum, and at the roots of the teeth; on all cases of extensive polypoid changes in the mucosa; in all cases of osteomyelitis, and nearly all cases of neoplastic growths.

As to the comparative results of radical and conservative methods of treatment, the writer found irrigation through the natural opening, after thorough trial, too slow and uncertain.

Most cases would be cured by what he called the "conservative operation," *i. e.*, the removal of as much as possible of that part of the antro-nasal wall which is in the inferior meatus, in some cases removing also a part of the inferior turbinated bone; then curetting and packing; followed by local irrigation until the discharge ceased.

Some extreme cases demand a more extensive radical operation which, however extensive in other ways, *must* include a large permanent opening into the nose, not merely an opening into the mouth in the canine fossa.

The discussion of the maxillary sinus was continued by the paper of DR. GEORGE A. LELAND of Boston. The writer called attention to the fact that indications for treatment were very definite in relatively few cases, *i. e.*, those at the extremes; the very mild cases calling, of course, for simple treatment, and the very severe cases calling for radical operation. These two classes of cases amounted to only about one tenth of the total. To the large middle group of doubtful cases he gave most of his attention.

After going over the usual list of causes, he spoke particularly of the "vitiated respiratory function" of the nose as present in most if not all of these cases, referring to Mr. Mayo Collier's (London) paper describing the "pumping action of respiration" on all the accessory sinuses, caused by the alternate condensation and rarefaction of the air during nasal respiration. By removing obstructions to nasal respiration and drainage, — such as septal spurs, hypertrophied mucous membrane, part of the middle turbinated (or moving it as a whole away from outer wall of nose by bending it over toward septum, even to the extent of fracturing it), rarely by removing the inferior turbinated; and making an artificial opening large enough to remain permanent in the outer wall

of the nose into the antrum in the middle meatus; and then by thorough cleansing of the antrum, by irrigating and occasionally mild curetting through the nasal opening, — the author felt that most of the cases could be cured, which are now assigned to the radical operation group.

II. THE FRONTAL SINUS.

Dr. C. G. Coakley of New York opened the discussion of the frontal sinus, treating the acute and the chronic cases separately. Under the heading of acute cases he replied to question *A*, substantially as follows:

1. Increasing edema and redness of eyelid with throbbing pain over sinus, for more than twenty-four hours after nasal drainage has been attempted.
2. Marked prolapse of the orbital wall of the sinus.
3. Displacement of the globe of the eye down and out, with diplopia.
4. Fistula in upper and inner angle of orbit.
5. Intense supra-orbital and frontal pain not relieved by intra-nasal drainage; with temperature and symptoms of beginning meningeal inflammation.

Under question *B* the writer said that most cases required only intra-nasal treatment; and he noted a series of 58 cases with 54 recoveries.

In the group of chronic cases, Dr. Coakley answered question *A* as follows, in summary:

1. Chronic suppurative frontal sinusitis with multiple recurring polypi and associated with ethmoid disease.
2. Severe acute exacerbations of chronic cases when the symptoms given under "acute" cases arise.
3. When pus from frontal sinus runs into the antrum of Highmore, and intra-nasal treatment does not prevent it from so doing.
4. Cases of very large sinus with multiple septa, diagnosed by x-rays.
5. Very narrow nasal space, where there is not room for intra-nasal work.
6. Cases where time of treatment is an important or necessary factor.
7. Cases in neurasthenic patients who will not allow thorough intra-nasal work.
8. Cases with fistula into frontal sinus.

In replying to question *B*, the writer was unable to give very satisfactory statistics of the intra-nasal or conservative treatment, but detailed a group of 79 cases, of whom 14% were cured; 51% improved but not cured; and 35% escaped observation and the results were unknown. Dr. Coakley closed with a review of the various radical operations, describing the Ogston-Luc, the Kuhnt, and the later so-called open operation, for obliterating the sinus; and, going over data of 104 cases, reported 101 cured of their sinusitis; 1 with a definite fistula into sinus remaining, and 2 dead.

Of the 10, 7 are under occasional treatment, having discharge from the sphenoidal sinus; and 3 have fistula into the maxillary sinus.

Dr. Wm. E. Casselberry of Chicago, Ill., continued the discussion of the frontal sinus, and first defined his idea of conservative treatment, as including any and all intra-nasal measures for cleansing and establishing drainage, and removing nasal obstruction; and the radical treatment as meaning any of the external open cutting operations.

He remarked upon the fact that intra-cranial infection from frontal sinus disease was very rare, and that when symptoms of that condition arise then the radical open operation was imperative, and at once; but he claimed that the mere chance of the intra-cranial infection arising was not a sufficient warrant for doing a radical operation, with its deforming wound, in the mild and latent chronic uncomplicated cases.

Other valid indications for a radical operation were, failure of the general health, mental depression, external fistula, impermeability of the naso-frontal duct and similar grave conditions.

But even in most of these conditions, if the symptoms be not urgent, he felt that, if possible, intra-nasal treatment was desirable as a preliminary to the radical operation and might be sufficient.

III. THE ETHMOIDAL SINUS.

The discussion of ethmoid disease was opened by Dr. John O. Roe of Rochester, N. Y., who first contrasted the general uniformity of the other accessory sinuses in anatomy, pathological conditions, symptoms and treatment with the lack of uniformity on all those points in the ethmoid cells, thus making the disease of those cells, often very obscure in diagnosis and difficult to treat.

He discussed the anatomy of the cells at some length, and in considering the symptoms classed the cases under two main heads: those characterized by pain, and those showing marked discharge of pus.

He said that acute inflammations of the ethmoid cells rarely called for operation, excepting when the acute is engrafted upon a chronic condition.

He felt very strongly that very many cases of "chronic ozena," with formation of crusts, and so-called atrophic rhinitis, were caused and kept up by an obscure infection of the ethmoid cells; and cited several cases with long standing symptoms extending over years, which yielded to thorough treatment of the ethmoid cells. He therefore strongly advocated very thorough treatment of *early* catarrhal conditions, especially if there were any discharge of pus. The writer then spoke of the many cases of persistent headache, migraine, neuralgia, etc., which were caused by pressure in the ethmoid cells, as well as by pressure of the middle turbinated bone, so commonly noted.

In regard to the method of operating, he condemned the use of the ring-knife and sharp curette as dangerous; and advised the use of the Grünwald punch forceps, and probe; and cautioned against all twisting and pulling, which is so likely to strip up and off, the mucous membrane from the bone. He felt that only those cases complicated with frontal sinus disease, required an external open operation.

Dr. John W. Farlow of Boston continued the discussion of ethmoid disease. He described the anatomy of the cells and outlined the usual train of symptoms; and enumerated those calling for operative interference as follows: (Summary) severe and long continued headaches; disturbance of vision and displacement of the eye; orbital abscess; syphilitic necrosis; polypi, and polypoid degeneration of mucous membrane of middle turbinated bone; frontal sinus disease caused by ethmoid obstruction; pus in the antrum of ethmoid origin; obstinate ethmoid suppuration with pus flowing into post-nasal space causing pharyngitis, laryngitis, bronchitis, asthma and stomach disturbances.

Under treatment, the author spoke of the advantage that the ethmoid cells had over the frontal sinus antrum and sphenoid cells, in that they were accessible to intra-nasal procedures, and could be *thoroughly* treated without external opening. In his own experience he had met with almost no cases where other than intra-nasal treatment seemed necessary or advisable. Only where there was an orbital abscess, or an abscess pointing on the surface and about to rupture spontaneously, or where there was syphilitic necrosis had he found it necessary to resort to an external opening.

IV. THE SPHENOIDAL SINUS.

DR. J. W. GLEITSMANN of New York opened the discussion of sphenoidal disease. He referred first to the work of the late Max Schæffer of Bremen, in 1892, commenting upon its completeness of symptomatology and examination and diagnosis, and upon the fact that little had been added to his description since that date. He detailed at some length the usual methods of examination and diagnosis, and the symptoms usually found. He said that the majority of acute cases gave favorable results upon simple release of pent-up secretions, by enlarging the ostium by removing a part of the anterior wall with a suitable hook and forceps, a proceeding which he considered a "conservative" method.

Afterward the use of astringents and cauterization and occasionally mild curetting completed the treatment. In severe acute cases with extension to the orbit or cranium radical open operation was indicated at once.

He said that the chronic affection was either a sequella of an acute infection, or was simultaneous with disease of the other sinuses, and due to the same infection which caused the disease in them. In these latter cases it was often difficult or impossible to isolate the symptoms due to the sphenoid alone, as all the sinuses were involved at the same time. But with abundant liquid pus, crusts on the middle turbinated and in the rhino-pharynx, pus appearing between the turbinated and the septum, mucous membrane hyperplastic, and polypi present — all of these latter obstructing drainage, then simple conservative methods would not do, and a radical operation was indicated, as was also the case when the orbit and eye were involved, or cerebral lesions were threatened.

DR. T. PASSMORE BERENS of New York continued the discussion of sphenoidal disease, and first defined his understanding of the two terms here used, "conservative" and "radical" treatment. By conservative treatment he understood the application of various medicaments to the sinus, through the ostium (or artificially enlarged ostium) after access had been gained to it by any necessary minor surgical measures for the removal of nasal obstruction, such as septal spurs, etc.

By radical treatment he understood any procedure whereby the sinus was fully exposed, its contents removed or destroyed, with the object of obliterating the cavity. The former was always done by intra-nasal route; the latter by any one of several routes, *i. e.*, intra-nasally by way of the ethmoid cells; by way of the antrum and through the ethmoid cells; or by way of frontal sinus and through ethmoid cells, when either one of these groups of cells, respectively, was involved.

Clinically the author considered the sphenoidal sinus as the most posterior of the ethmoid cells, and believed that it was very rarely involved alone, but almost always in conjunction with the ethmoid cells.

He gave brief histories of several groups of cases of different types, and summed up his conclusions as follows:

I. Acute uncomplicated empyema of the sphenoidal sinus is amenable to conservative treatment, if the ostium is accessible in the nose.

II. Acute multiple sinusitis involving the sphenoid is amenable to conservative treatment provided drainage is not blocked by anatomical deformities, which may render surgical procedures necessary in order to gain access to the ostium.

III. Acute or chronic pyosinus (meaning that condition in which the sinus, not itself inflamed, acts merely as a reservoir for pus from some other source) can be cured only by removal of the cause, *i. e.*, through treatment of the source of the pus, usually the ethmoid cells.

IV. Simple chronic empyema of sphenoidal sinus *alone*, not accompanied by serious tissue changes in the interior of the sinus, is amenable to conservative treatment.

V. Chronic empyema of the sphenoidal sinus, as a complication of disease of other sinuses, or when accompanied by tissue changes in its own interior, can be cured only by radical procedure, involving the removal not only of all diseased tissue, but also all other tissue which may be a hindrance to drainage and after treatment.

(To be continued.)

Recent Literature.

A Manual of Practical Hygiene. For Students, Physicians and Medical Officers. By CHARLES HARRINGTON, M.D., Assistant Professor of Hygiene in Harvard University Medical School, Boston. Third edition, revised and enlarged. Illustrated. Philadelphia and New York: Lea Brothers & Co. 1905.

This third edition of Dr. Harrington's work on Hygiene has quickly followed its predecessor. The subject of which it treats is evidently becoming of interest to a wider circle of readers year by year as the problems of health become more generally known and understood. Dr. Harrington's book may well be on the shelves of others than specialists in the subject. The general appearance of the book is much the same as of the previous editions. Certain alterations have been made in those departments of the subject in which advance has been conspicuous since the publication of the previous edition. A chapter on immunity has been introduced, which, little as the matter is at present understood, is valuable as an expression of our present knowledge of the subject. We unhesitatingly commend this book again to all who are interested in the problems of health.

A Treatise on Diseases of the Nervous System. By L. HARRISON METTLER, A.M., M.D. 8vo, pp. 989. With 212 illustrations and 3 plates. Chicago: Cleveland Press. 1905.

The author of this volume regards the neurone doctrine as an accepted fact, and has no word to say of the recent attacks that have been made upon that doctrine. He attempts to classify the various diseases of the nervous system into two great groups, the neuronic and the non-neuronic. Schemes and classifications are, perhaps, of subordinate importance, but we must confess that he has classified his diseases under these headings in a somewhat unintelligible fashion. Most of the diseases whose pathology is still undetermined are grouped as neuronic diseases, such as the tics, the spasmodic disorders, the angioneuroses and trophic neuroses and the various affections based upon disturbed functions of the thyroid and other glands. Certain

toxic affections, such as neuritis, where certain neurones are primarily affected, are called non-neuronic. Tabes comes under one heading; general paresis, which the author expressly states is pathologically allied to tabes, comes under the other. The classification, moreover, separates certain affections which clinically should be discussed together, such as poliomyelitis and the other forms of muscular atrophy. Apart from this, the book is of average merit. The style is diffuse and sometimes involved, and there is considerable needless repetition, but the essential facts in regard to the diseases of the nervous system are set forth with fair correctness, but with little originality. The book is not a valuable contribution and addition to our present knowledge, but merely a compilation, of less merit than those already before the public. The use of the book is materially lessened by the defective mechanical presentation. Misprints are frequent. The absence of distinctive running titles render ready reference to subjects impossible, and the enormous weight of the volume makes the use of it a burden.

Human Physiology. By Joseph Howard Raymond, A.M., M.D., Professor of Physiology and Hygiene in the Long Island College Hospital, New York City. Third edition. pp. 687. Philadelphia and London: W. B. Saunders & Co. 1905.

In this thoroughly revised third edition of his textbook of physiology, Professor Raymond has added, among other subjects, recent work on nutrition and metabolism from American laboratories, a discussion of vegetarianism, and a consideration of the newer views of hemolysis and bacteriolysis. The book was "prepared with special reference to students of medicine," and makes a compact and readable volume for that purpose.

Diet in Health and Disease. By Julius Friedenwald, M.D., Clinical Professor of Diseases of the Stomach in the College of Physicians and Surgeons, Baltimore, and John Ruhräh, M.D., Clinical Professor of Diseases of Children in the College of Physicians and Surgeons, Baltimore. Philadelphia, New York and London: W. B. Saunders & Co. 1905.

There is much to commend in this book. It is practical, modern and written for American physicians. In addition to a discussion of the general principles of diet, and diet in special diseases, considerable space is devoted to army and navy rations, and dietaries in public institutions. A most welcome section is the inclusion in the volume of the greater part of the Bulletin No. 28 of the Experiment Stations of the United States Department of Agriculture. This gives the chemical composition of American food materials, and will be found to be of great service to the physician, especially in planning diets for diabetic patients. The copy of Thomas's diet lists at the end of the volume is unfortunate, as one can readily see from the following quotation of beverages in diabetes: "Tea and coffee without *cream* or sugar, *buttermilk*, kumiss, *skimmed milk*, etc."

The sections on the physiology of digestion and absorption are crude and not at all current with modern ideas. No advantage is taken of Pawlow's epoch-making discoveries or of Chittenden's studies on diets containing small amounts of albumen and of low caloric value. The advantages to be gained by reducing salt in the diet of epileptics are not mentioned.

The Diet in Diseases of the Circulatory System may be cited as an example of how much the whole volume could be improved by condensation.

Handbook of Physiology. By Austin Flint, M.D., LL.D., Professor of Physiology in Cornell University Medical College. 864 pages. New York: The Macmillan Company.

In this book Professor Flint has largely rewritten his textbook of Human Physiology, the last edition of which was published in 1888. Many features of the book remind the reader of older treatises on physiology, — for example, the numerous illustrations from works on descriptive anatomy, and the introductory paragraphs on "physiological anatomy." Figure 144, from Exner, represents the motor cortical zone on both sides of the Rolandic fissure; and Sherrington and Grünbaum are said to have shown that "the cortical motor areas are more extensive than has been supposed"; whereas, in fact, these investigators have limited the areas to the region immediately in front of the Rolandic fissure. Sherrington's illuminating studies on reciprocal innervation, and the important observations of Bayliss and Starling on secretin are not mentioned. The matter presented, however, is well organized, the style is clear, and the occasional reference to original papers makes the reading interesting.

Clinical Diagnostic Bacteriology, Including Serum Diagnosis and Cytodiagnosis. By Alfred C. Coles, M.D., D.Sc., F.R.S., Edinburgh. With colored plates. London: J. and A. Churchill. Philadelphia: P. Blakiston's Son & Co. 1904.

As the title indicates, this work is written from the clinician's point of view and contains much that will be found helpful to the student or practitioner who seeks the aid of laboratory methods in diagnosis.

Over a third of the volume is devoted to the tubercle bacilli and other acid-fast bacteria. In this section are embodied the author's own investigations which appeared originally in the English *Journal of State Medicine*. He found that pseudo-tubercle bacilli may be far more resistant to the decolorizing action of acid and alcohol than has been taught. Experiments showed that in order to distinguish the genuine from the pseudo-tubercle bacilli it was necessary to decolorize the film in 25% sulphuric acid for sixteen hours. All tubercle bacilli will retain their color for that length of time. The specimens were stained with the Ziehl-Neelsen carbol-

fuchsin solution for about eight minutes. Many of the smegma bacilli were not decolorized by alcohol in nine hours; some of the other pseudo-tubercle bacilli retained the red stain after immersion in alcohol for twenty-four hours.

There is a short but satisfactory account of cytodiagnosis. The bacteriological examination of the blood is not described, although surely a clinical method of sufficient importance to merit consideration. The possibility of the etiological diagnosis of typhoid fever by isolating Bacillus typhosus from the feces is not noted There is no reference to the paratyphoid bacilli and Micrococcus catarrhalis is not described. The book is written in a clear and interesting style and, although an inadequate treatment of the subject contains much information not found in larger treatises.

A Text-Book on Medical Practice. For Practitioners and Students. Edited by WILLIAM BAIN, M.D. Durh., M.R.C.P. Lond. Illustrated. New York, London and Bombay: Longmans, Green & Co. 1904.

This new "Text-Book of Medical Practice" is the product of the work of sixteen contributors, among whom occur the names of Drs. Sidney Martin, J. S. Risien Russell, J. Rose Bradford, and the editor, William Bain. Each of the sixteen contributors has written on a subject for which he is particularly known, and the text-book, therefore, carries an authority which is rapidly becoming impossible when the entire subject matter is written by one man. An excellent innovation, and one which the editor offers as the main justification for the appearance of another work of this character, is the consideration of anatomy, histology and physiology in direct relation to groups of diseases. It is maintained that, while the principle of combining the more theoretical with the practical branches of medicine receives due recognition in bedside practice, it has not generally been adopted in clinical textbooks. With this statement we are in entire agreement. The evident shortcoming of many textbooks is the total lack of a proper appreciation of the importance of the anatomical and physiological side of the subjects discussed. The result is a one-sided presentation which gives a false impression to the student and fails, therefore, to lay down the principles upon which all diagnosis must be based. This error Dr. Bain has avoided by including, in small type, excellent brief summaries of underlying anatomical and pathological conditions. Following these sections the various diseases are discussed in a way similar to that usual in vogue. A specially full discussion of the disorders of the nervous system is included in the volume, the anatomical sections, which are to be highly commended, from the pen of T. G. Brodie, and the clinical section by J. S. Risien Russell, which is a sufficient guarantee of the excellence of its presentation. The skin receives a special section. A chapter on the infective diseases of temperate climates, tropical diseases, and a final chapter on the inter-relation of organs in disease are topics which do not ordinarily find such adequate discussion in textbooks of this character. In spite of its comprehensiveness, the subject matter is compressed into less than eleven hundred pages, brought about in part by the liberal use of small type and by a large page. The book is well bound in flexible covers; is satisfactorily printed, and contains many illustrations, largely on the anatomical side. There are practically no illustrations of disease as shown either by pathological preparations or by photographs of actual patients. More might be done in this respect with advantage, but it is, on the other hand, a certain relief to be spared the over-illustrating which is becoming popular of late years. The book is to be highly commended.

Treatise on Orthopedic Surgery. By EDWARD H. BRADFORD, M.D., Surgeon to the Boston Children's Hospital; Consulting Surgeon to the Boston City Hospital; Professor of Orthopedic Surgery, Harvard Medical School; and ROBERT W. LOVETT, M.D., Surgeon to the Infants' Hospital and to the Peabody Home for Crippled Children; Assistant Surgeon to the Boston Children's Hospital; Assistant in Orthopedic Surgery, Harvard Medical School. Third edition. Illustrated. New York: William Wood & Company. 1905.

This book of Dr. Bradford and Dr. Lovett has taken a definite place among the recognized best textbooks on orthopedic surgery. The general subject is one which has of late years excited the enthusiastic interest of many men in the profession; the progress which this has brought about is reflected in this third edition of a book which, from the first, has been deservedly popular. Many changes have been necessitated in the preparation of this edition in the way of rewriting certain portions, altering others and rearranging chapters and subjects in accordance with the advance which has been made since the appearance of the previous edition in 1899. Such changes are particularly noticeable in the chapter on congenital dislocation of the hip, scoliosis, traumatic and non-traumatic coxa vara and of non-tuberculous disease of the joints. A chapter on orthopedic apparatus has also been added. The illustrations have been increased in number, many of them striking photographic representations of deformities which lend themselves peculiarly to this type of illustrating. A chapter on arthritis deformans, a term which the authors still continue to use in view of the vagueness of our actual knowledge of the subject, should be read with interest by all concerned with the general problems of internal medicine. We commend this book, as we have its predecessors, not only to those interested primarily in orthopedic surgery, but also to other physicians, who are too likely to fail to realize how intimately the conditions which the orthopedic surgeon treats are associated with other affections, and particularly with those of the nervous system.

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AMERICAN TUBERCULOSIS EXHIBITION.

The American Tuberculosis Exhibition, which is being planned under the joint auspices of the National Association for the Study and Prevention of Tuberculosis and the Committee on the Prevention of Tuberculosis of the Charity Organization Society of New York City, will open on Nov. 27 and close on Dec. 9. In arranging the exhibition the Committee on Arrangements laid chief stress on a popular presentation of the facts of the situation and the approved methods of prevention and cure. Charts and tables of all sorts will show the public the conditions which confront it, and by means of photographs, plans, models and apparatus the recognized measures which have been taken to cure the disease will be presented in graphic form. The co-operation from sanatoria of standing in the United States and Canada has been particularly cordial, and both public and private institutions from all parts of the country will be elaborately represented.

A representative collection of material from the recent exposition in Paris has also been secured and will doubtless form one of the most attractive features of the New York exhibition. Naturally, the various devices and mechanical appliances which are now used in the treatment of this disease will be shown and the models of the various forms of tents and buildings for the open-air treatment will be given a prominent place.

A series of public meetings has been arranged, all of which will be held at the Museum during the time of the exhibition. On the opening night the principal address will be given by Mr. Talcott Williams, of Philadelphia, and brief addresses will also be made by Mayor McClellan, of New York, by Dr. Darlington, Commissioner of Health, and by President Jesup of the Museum.

On Wednesday evening, Nov. 29, a special meeting devoted to tuberculosis and the trades will be held at which the principal address will be by Mr. Graham Taylor, of Chicago, with short addresses by President Gompers of the American Federation of Labor, and other well known representatives of organized labor. On Friday evening, Dec. 1, a special meeting for physicians has been called at which addresses will be made by Drs. Lawrence F. Flick, of Philadelphia, W. A. Evans, of Chicago, A. Jacobi, of New York, Vincent Y. Bowditch, of Boston, and others. Invitations to this meeting have been sent out widely and it is expected that a large representation of the profession in New York and other parts of the country will be in attendance. On Friday, Dec. 8, a meeting for the teachers of the public schools has been arranged, the address on that occasion to be by Dr. S. A. Knopf, of New York. The Board of Education of the city has lent itself most cordially to the movement and is officially urging the teachers to attend the meeting as well as the exhibition.

The effects of an undertaking on a scale such as this must inevitably be far-reaching. Already the committee is in receipt of numerous requests from other cities for the loan of the material, and it is hoped that the contributors will co-operate in the effort to provide for a series of similar exhibitions in other parts of the United States. The National Association for the Study and Prevention of Tuberculosis is also endeavoring to form one or more travelling exhibits on a smaller scale which may be packed in small compass and kept constantly on the move, being exhibited in towns and villages where it would be impossible to arrange for or finance a large exhibition.

The meeting for the medical profession on the evening of Dec. 1, and the fact that a special call is being sent out to sanatorium physicians to meet on the afternoon of that day, will doubtless attract a large number of physicians to the exhibition at that time. It may be added for the information of the medical members that a special exhibition of pathological material has been installed, the nucleus of which is formed by contributions from the Phipps Institute in Philadelphia, and the laboratory at Saranac Lake.

In our issue of last week we commented editorially upon the State Tuberculosis Exhibition which is to be held in this city the latter part of December. We reiterate what we then said that

such exhibitions should receive the warmest encouragement from physicians and laity alike to the end that their educational value may be as wide-spread as possible. The Boston exhibition comes after the one in New York described above and, as already stated, will receive from it many exhibits of interest.

THE USE OF THE BIOGRAPH IN MEDICINE.

In another portion of this issue we publish a paper by Dr. Walter G. Chase on "The Use of the Biograph in Medicine." For some months past Dr. Chase has devoted much attention to the practical problem of representing certain conditions of disease by means of moving pictures. The first published account of this work appears in the article to which we have alluded. The difficulties and expense which must be met in any such work, and the enthusiasm necessary to carry it to a successful conclusion, must be recognized as the chief reasons which have prevented an earlier introduction of this valuable method of photography into teaching and demonstration of medical subjects. The method naturally lends itself to the representation of those conditions which are characterized by abnormal movements. The nervous system, therefore, presents itself as the field of greatest possibility, although its usefulness can by no means be limited to this department of medicine.

Dr. Chase's first highly successful attempts to reproduce abnormal movements have been confined largely, though not exclusively, to the epileptic seizure. He could hardly have chosen a more difficult subject for the obvious reason that the epileptic attack cannot be timed to suit the convenience of the photographer. Dr. Spratling of the Craig Colony for Epileptics has, however, generously co-operated with him in the attempt to obtain desirable exposures, and the ultimate success of the somewhat laborious undertaking is illustrated by the occasional pictures reproduced in connection with Dr. Chase's article. Naturally a photograph of this sort derives its chief interest from the fact that it is made to pass rapidly across a screen, reproducing thereby the actual movements of the patient. This is, of course, lost in the reproduction of the individual pictures, but the value of selecting a specific movement from a large number is an advantage of this method of photography which can with difficulty be equalled by any other process.

That Dr. Chase's pioneer work in this country on the practical use of the biograph in medicine has been appreciated is shown by the fact that he has demonstrated his films in various cities and before large audiences of physicians. Only those who have seen moving pictures can appreciate the extraordinary effect produced upon the observer by the reproduction of an epileptic attack, for example, continuing from its beginning to its end. Except for those particularly favored in this respect, physicians of wide experience may go for many years without once observing a complete attack, and even if they may have the opportunity, the study of individual movements, the succession of tonic and clonic spasms, and the remarkable movements of an automatic sort are lost sight of in the general excitement. Few physicians could see such a series of epileptic attacks as Dr. Chase has been able to reproduce without learning something of the disease which neither his previous observations or his study of textbooks have taught him.

The general wide applicability of the method in a great variety of conditions, particularly involving the nervous system, needs only to be mentioned to be appreciated. Few, for example, have seen the really typical tremor of multiple sclerosis or some of the unusual tics which, of course, may easily be reproduced by the biograph method. The more usual diseases of the nervous system also are still comparatively little known by the general practitioner of medicine. These may, and no doubt in the future will, be reproduced in such a way that once seen by the student they will leave an impression hard to eradicate. In general, we are in entire agreement with Dr. Chase that the universal adoption of biograph pictures as a means of instruction will mark a step far in advance of any yet taken in the application of photography to medicine. There can be no question that the time is ripe for this innovation and that the immediate future will see its general introduction into our medical schools.

TESTIMONIALS TO PHYSICIANS.

It has long been the custom in foreign countries, and notably in Germany, to recognize the attainments of medical men before their deaths. This custom apparently in no sense detracts from the ceremonies which naturally follow the deaths of great men, and it certainly has the advantage of permitting the recipient of the honor an opportunity of expressing his appreciation. In Germany the seventieth or seventy-fifth anniversary of a man's birth is recognized by his colleagues with fitting and often impressive ceremonies. We have been slow in following this custom, but there is evidence at hand to

show that the tendency is growing even here to recognize the merits of professional work before such work is finished. Examples of this we have recently had in the extraordinary demonstration on the departure of Professor Osler for England, and also in a fitting recognition of the services of Dr. Jacobi of New York, both as a citizen and as a physician.

On the evening of Nov. 11, Dr. Nicholas Senn of Chicago was given a like testimonial at the hands of his colleagues from various parts of the country. At the dinner, which was given at the Auditorium Hotel in Chicago, there was an attendance of six hundred and eighty-six, and many physicians were turned away because of insufficient accommodation. At the outset of the post-prandial ceremonies Dr. Joseph D. Bryant of New York presented a gold medallion to Dr. Senn on one side of which was a likeness of Dr. Senn and on the other an appropriate inscription. Speeches were numerous, enthusiastic and eulogistic, all expressive of the warm feeling entertained by the profession toward Dr. Senn. Dr. William J. Mayo, Colonel Harvey of the United States Army, Dr. Lewis S. McMurtry of Louisville, Ky., and many others spoke. Dr. Senn, in acknowledging what his hosts had said, read a poem on the subject "For Life is Short and Art is Long," and likewise expressed himself as deeply moved by the attention which had been bestowed upon him.

Almost at the same time that Dr. Senn was being thus honored by his colleagues, Dr. John C. Hemmeter of Baltimore received an appreciation from his fellow physicians in the form of an oil portrait of himself. This was presented to him at a meeting at which were present many leading physicians of the eastern states, largely men who have been his pupils in times past. Surgeon-General Wyman was the chief speaker of the evening and made the presentation address. Although in general the occasion was a less formal one than that at which Dr. Senn was the guest of honor, it was no less earnest in the expression of its appreciation for a man who has attained eminence both in his profession and in other walks of life.

Gratifying as it may be to recognize the success of one's endeavors, it is doubly so to receive that recognition also from the hands of men working in the same line. An admirable beginning has been made in this country toward the establishment of this custom, and we have no doubt it will continue and grow as men worthy of such recognition multiply.

MEDICAL NOTES.

The Mütter Lecture on Surgical Pathology. — The Mütter lecture on surgical pathology, under the auspices of the College of Physicians of Philadelphia, will be given in that city on the evening of Dec. 1, on the subject "Infections of the Biliary Tract," by Dr. A. O. J. Kelly.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, Nov. 22, 1905, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 49, scarlatina 15, typhoid fever 12, measles 135, tuberculosis 38, smallpox 0.

The death-rate of the reported deaths for the week ending Nov. 22, 1905, was 17.68.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, Nov. 18, 1905, was 169, against 199 the corresponding week of last year, showing a decrease of 30 deaths, and making the death-rate for the week 14.03. Of this number 81 were males and 88 were females; 163 were white and 6 colored; 102 were born in the United States, 67 in foreign countries, and 0 unknown; 35 were of American parentage, 119 of foreign parentage, and 15 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 40 cases and 4 deaths; scarlatina, 18 cases and 1 death; typhoid fever, 29 cases and 2 deaths; measles, 115 cases and 1 death; tuberculosis, 36 cases and 17 deaths; smallpox, no cases and no deaths. The deaths from pneumonia were 25, whooping cough 0, heart disease 21, bronchitis 5, and marasmus 3. There were 8 deaths from violent causes. The number of children who died under one year was 27; the number under five years, 38. The number of persons who died over sixty years of age was 38. The deaths in public institutions were 37.

Pure Food. — A meeting and exhibition in the interests of pure food was held in Boston, Nov. 21, under the auspices of the Women's Educational and Industrial Union. Prof. William T. Sedgwick presided and Drs. H. W. Wiley, chief of the United States Bureau of Chemistry, E. H. Jenkins of the Agricultural Experiment Station at New Haven, S. H. Durgin and Richard C. Cabot were among the speakers.

Appointment of Dr. Timothy J. Reardon. — Dr. Timothy J. Reardon, a graduate of the Harvard Medical School in the class of 1894, is reported to have been appointed a trustee of

the Boston City Hospital. Dr. Reardon's professional work has been largely devoted to the throat; he holds the position of assistant laryngologist at the Carney Hospital. The report awaits confirmation.

NEW ENGLAND ASSOCIATION FOR THE EDUCATION OF NURSES. — The meeting of the New England Association for the Education of Nurses, which takes place this week in Boston, should receive the encouragement which comes from a generous attendance. The main purpose of the Association is to advance the calling of the nurse, particularly throughout New England. Semi-annual meetings are held at which subjects immediately concerned with nursing in its broader applications are discussed. The membership is not confined to nurses, but also includes physicians.

NEW YORK.

A CENTENARIAN. — Mrs. Ann Fox of Bayonne, Hudson County, N. J., died from cerebral apoplexy on Nov. 6, at the reputed age of one hundred and five years. She was a native of Ireland.

WORK OF THE RED CROSS. — The second annual meeting of the New York State Branch of the American National Red Cross Society was held on Nov. 14, when an address was made by Miss Mabel Boardman of Washington, who accompanied Miss Roosevelt on her recent trip to the Orient. She told of the work of the Red Cross in the war between Russia and Japan and of its relief work in behalf of the sufferers from the recent typhoon in the Philippines.

CONSOLIDATION OF THE NEW YORK MEDICAL JOURNAL AND THE MEDICAL NEWS. — Announcement is made that on Jan. 1, 1906, the *Medical News* will be incorporated with the *New York and Philadelphia Medical Journal*. The consolidation of the *Philadelphia Medical Journal* with the *New York Medical Journal* took place in June, 1903, and this further incorporation removes another medical weekly from circulation which has had an honorable career since 1843. The name under which the new journal is to appear is not announced.

MINCED SPIRAL-EARED POLAR MICE. — At the semi-annual dinner of the Canadian Club, recently held at the Hotel Astor, the *pièce de résistance* was a dish described in the menu as "Minced spiral-eared polar mice," the material for which, it was announced, came from Northern Baffin-Land and was contributed especially for the occasion by Commander Peary. Among the speakers at the dinner were Surgeon General Suzuki, of the Japanese Navy, and Dr. Robert T. Morris, the New York surgeon, who is also a mighty hunter. The former described the field sports of the Japanese and explained their method of capturing wild fowl with a net, and Dr. Morris gave an account, illustrated with lantern slides, of a recent exploring trip to Hudson's Bay.

ANNUAL MEETING OF ST. JOHN'S GUILD. — The annual meeting of St. John's Guild was held in the Madison Square Theatre on Nov. 14. The reports show that the work of the society during the past season has been the third largest of any year since its floating hospital, the "Helen C. Juillard," has been in commission. Mothers and children were cared for to the number of 35,660, and 13,700 patients treated. Since the first of the year a debt of $25,000 has been paid off. There are two projects which the Guild has in contemplation, if the necessary funds can be secured. The first is the placing of heating facilities in its seaside hospital on Staten Island, so that patients may be received there throughout the year, and the second, the establishment next summer of a tent colony for orthopedic patients on the hospital grounds.

NEW BUILDING FOR ST. LUKE'S HOSPITAL AT UTICA. — There was recently opened at Utica, N. Y., a beautiful new building for St. Luke's Home and Hospital, erected and entirely paid for by Mr. and Mrs. Frederick T. Proctor. It occupies a commanding site, and is in the shape of the letter H. The whole is of the best fireproof construction, and equipped with every modern appliance. The mortuary chapel of St. Barnabas, with its altar and furniture, is a memorial of Miss Alice Barnard. On the occasion of the dedication of the hospital, the medical director, Dr. Willis E. Ford, on behalf of the medical and surgical staff, presented to Mr. and Mrs. Proctor a handsome silver loving cup, as a token of their appreciation of the generous gift which they had made to the city and community.

DIPHTHERIA IN PUBLIC SCHOOLS. — Four public schools in the borough of Queens were closed on Nov. 6 by order of the Health Department, in consequence of an outbreak of diphtheria in the Woodhaven and Union Course districts. In the report to the Department by Dr. John Moore, sanitary superintendent of the borough which caused this action, it was stated that the conditions in the infected section were bad, and that the blame for this rested largely on the local practitioners. Some of the cases of diphtheria had not been reported by the physicians in attend-

ance, and a house-to-house inspection made on Nov. 3, 4 and 5 by the diagnostician of the Health Department proved that children had been attending school while suffering from diphtheria and tonsilitis. Up to Nov. 6 seventeen cases of diphtheria, with five deaths, were reported in the infected districts. The four schools closed were attended by about twelve hundred children.

The Hon. Joseph H. Choate on Charitable Institutions. — The sixth annual meeting of the New York State Conference of Charities and Correction was held in the Carnegie Lyceum on Nov. 15, 16 and 17. On the opening day Dr. Darlington, President of the Health Department, welcomed the three hundred delegates, and addresses were made by Nathan Bijur, president of the Conference, Edward T. Devine, general secretary of the Charity Organization Society and the Hon. Joseph H. Choate, who is chairman of the local committee of the State Conference. In the course of his remarks the latter excited considerable merriment by saying: "It seems to me that we have a separate and especial charity for every infirmity that flesh is heir to, for every vice, sin and frailty, and as new infirmities develop and new diseases arise, you have at once an institution in which each is given attention. It appears that these institutions will go on increasing until before long we may expect to see in the City of New York an asylum for broken-down bridge players. I think there will be room for it and need of it."

Obituary.

A. C. HAMLIN, M.D.

Dr. Augustus Choate Hamlin died in Bangor, Me., Nov. 18, at the age of seventy-six. He received his preliminary education at Bowdoin College and was graduated in the class of 1851; he took his degree in medicine from the Harvard Medical School in 1855. He then spent two years in foreign study, returning to Bangor in 1857 and marrying the same year. He practised medicine in Bangor until April, 1861, when he organized a military company at his own expense and volunteered as assistant surgeon. He served throughout the war, and rose in rank until, in 1863, he was made a lieutenant colonel and medical inspector of the hospitals in and about Washington. At the end of the war he returned to Bangor and resumed the practice of medicine.

The Russian Emperor Alexander in 1878 made him a Chevalier of the Order of St. Anne. He was twice mayor of Bangor, and held many other positions of trust and responsibility. In addition to his work as a medical author, he attained an international reputation for his expert knowledge of tourmalines, his private collection being reputed the best in the country. He wrote also concerning the war, and particularly of the campaign at Chancellorsville. In his death Maine loses one of its most distinguished citizens.

Miscellany.

THE REVOLUTION IN RUSSIA AND THE MEDICAL PROFESSION.

In the complete political and social upheaval now taking place in Russia medical men have had a difficult part to play, and the fact that they are represented as working sincerely now on the side of the autocracy, now on the side of the revolutionary party, shows this to be the case. As the guardians of the public health, medical men are naturally deeply concerned in the preservation of law and order, for with mob government there comes the suspension of all the domestic machinery devised for the safeguarding of life and the preservation of health. On the other hand, as members of an enlightened profession, no class in Russia can have seen more clearly than the medical men that the government of a vast country by one man at the completely unfettered instigation of any group of men with whom he may choose to surround himself is a monstrous anomaly. At a general meeting of the League of Medical Men, St. Petersburg, on Oct. 23, the subjects discussed included the three following: (1) Proposed adhesion to the recently formed league to combat capital punishment; (2) a general strike of medical men; and (3) the relations of the medical profession to the Imperial Duma. The opinions of the meeting on the third point are no longer of interest as no one cares further about the Duma, but as to the first it was decided to cease professional relations with any medical man who should in any way contribute to the carrying out of capital punishment, an exercise of the boycott which is clearly dictated by a strong turning towards humanitarianism. As to the second, after a long debate, during which many present had advocated partial boycott of selected persons and institutions, it was decided to favor a general strike in sympathy with the revolutionary movement. A curious comment upon the existing legislation in Russia as it affects medical men is furnished by the position of Professor Behrend who has recently been summoned to St. Petersburg by an old patient whom he had attended already in Berlin. Notwithstanding the tempting character of the invitation, says the *Novosti*, with apparent reference to the fee offered, the professor replied that although the St. Petersburg police would probably allow him as a professor in a German university to reside in St. Petersburg without trouble, they might have the right to send him out of the capital as a Jew, and not wishing to subject himself to the latter possibility he refused to go until the situation was changed. — *Lancet.*

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, NOV. 11, 1905.

CITIES.	Population.*	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diphtheria and croup.	Typhoid Fever.	Diarrheal Diseases.
New York	3,908,644	1,127	271	23.60	16.23	2.95	1.06	3.28
Chicago	1,990,780	469	194	23.44	13.43	3.62	1.70	5.96
Philadelphia	1,407,988	438	118	23.34	13.21	2.73	1.36	4.33
St. Louis	633,606	—	—	—	—	—	—	—
Baltimore	543,229	221	56	23.36	11.76	.90	3.62	2.26
Cleveland	444,251	—	—	—	—	—	—	—
Buffalo	400,645	—	—	—	—	—	—	—
Pittsburg	362,402	—	—	—	—	—	—	—
Cincinnati	338,377	—	—	—	—	—	—	—
Milwaukee	325,990	—	—	—	—	—	—	—
Washington	360,776	—	—	—	—	—	—	—
Providence	198,744	62	17	14.52	12.90	—	1.61	4.84
Boston	598,526	188	46	20.74	12.78	1.59	1.06	1.06
Worcester	127,963	39	13	15.38	7.69	5.13	—	5.13
Fall River	105,697	41	20	17.07	14.63	—	—	9.76
Cambridge	97,426	30	9	20.00	23.33	6.67	—	3.33
Lowell	94,845	27	7	21.22	22.22	3.70	—	3.70
Lynn	77,025	20	3	5.00	5.00	—	—	—
New Bedford	74,221	26	11	11.54	7.69	—	—	3.85
Springfield	73,484	21	4	19.05	14.29	—	4.76	4.76
Lawrence	69,930	26	12	30.77	23.08	—	—	11.54
Somerville	68,186	15	3	20.00	33.33	6.67	6.67	—
Holyoke	49,134	6	3	33.33	16.67	16.67	—	16.67
Brockton	47,782	9	1	22.22	—	—	11.11	—
Malden	37,980	9	2	—	11.11	—	—	—
Haverhill	37,818	4	1	—	25.00	—	—	—
Salem	37,586	18	7	16.67	—	5.56	5.56	—
Chelsea	37,377	12	3	16.67	25.00	—	8.33	—
Newton	36,694	11	1	36.36	9.09	18.18	—	—
Fitchburg	33,017	8	4	—	12.50	—	—	—
Taunton	30,952	—	—	—	—	—	—	—
Everett	29,108	5	2	40.00	—	20.00	—	—
Quincy	28,067	5	—	20.00	—	—	—	—
Waltham	26,293	4	2	25.00	50.00	25.00	—	—
Gloucester	26,006	—	—	—	—	—	—	—
Pittsfield	25,000	6	1	33.33	—	—	—	16.67
Brookline	23,424	—	—	—	—	—	—	—
North Adams	22,125	5	1	—	—	—	—	—
Chicopee	20,187	4	1	75.00	—	—	—	—
Northampton	19,943	7	—	—	—	—	—	—
Medford	19,638	5	1	—	—	—	—	—
Beverly	15,232	8	3	25.00	—	—	—	—
Newburyport	14,673	6	1	—	—	—	—	—
Hyde Park	14,492	3	0	33.33	—	—	33.33	—
Woburn	14,401	5	1	20.00	20.00	—	—	20.00
Melrose	14,394	5	1	20.00	20.00	—	—	—
Leominster	14,290	—	—	—	—	—	—	—
Marlboro	14,072	6	1	16.67	—	—	—	—
Westfield	13,609	3	—	—	—	—	—	—
Clinton	13,103	5	1	—	—	—	—	—
Peabody	13,097	—	—	—	—	—	—	—
Attleboro	12,762	—	—	—	—	—	—	—
Revere	12,647	1	—	100.00	—	—	—	—
Adams	12,482	—	—	—	—	—	—	—
Milford	12,102	—	—	—	—	—	—	—
Gardner	11,981	4	2	—	25.00	—	—	—
Weymouth	11,585	0	—	—	—	—	—	—
Framingham	11,549	—	—	—	—	—	—	—
Watertown	11,302	2	—	50.00	—	—	—	—
Plymouth	11,118	—	—	—	—	—	—	—
Southbridge	10,947	5	3	40.00	—	20.00	—	20.00
Wakefield	—	2	—	—	50.00	—	—	—

* As last reported.

Deaths reported, 2,922; under five years of age, 755; principal infectious diseases (smallpox, measles, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption), 655; acute lung diseases 417, consumption 363, scarlet fever 8, whooping cough 10, cerebrospinal meningitis 14, smallpox 0, erysipelas 10, puerperal fever 14, measles 13, typhoid fever 43, diarrheal diseases 111, diphtheria and croup 69.

From whooping cough, New York 3, Chicago 1, Philadelphia 4, Baltimore 1, Fall River 1. From scarlet fever, New York 5, Chicago 2, Boston 1. From cerebrospinal meningitis, New York 8, Boston 3, Lowell, Newton and Beverly 1 each. From erysipelas, New York 4, Chicago 1, Philadelphia 2, Baltimore 1, Boston 1, Everett 1. From typhoid fever, New York 12, Chicago 8, Philadelphia 6, Baltimore 8, Providence 1, Boston 2, Springfield, Somerville, Brockton, Salem, Chelsea and Hyde Park 1 each. From measles, New York 8, Boston 2, Lawrence 3. From diphtheria and croup, New York 22, Chicago 17, Philadelphia 12, Baltimore 2, Boston 3, Worcester 2, Cambridge 2, Newton 2, Lowell, Somerville, Holyoke, Salem, Everett, Waltham and Southbridge 1 each.

In the seventy-six great towns of England and Wales, with an estimated population of 15,600,377, for the week ending Nov. 4, 1905, the death-rate was 15.6. Deaths reported 4,683; acute diseases of the respiratory organs (London) 177, whooping cough 56, diphtheria 69, measles 80, smallpox 0, scarlet fever 64.

The death-rate ranged from 6.2 in Hornsey to 23.4 in Oldham; London 16.6, West Ham 17.1, Brighton 16.0, Southampton 11.3, Plymouth 18.4, Bristol 14.7, Birmingham 16.7, Leicester 13.5, Nottingham 12.8, Birkenhead 12.6, Liverpool 17.9, Wigan 10.2, Bolton 17.3, Manchester 17.3, Salford 13.3, Halifax 15.4, Bradford 10.9, Leeds 16.1, Hull, 17.2, Sheffield 14.6, Newcastle-on-Tyne 17.2, Cardiff 13.6, Rhondda 15.4, Merthyr Tydfil 17.7, Hanley 20.2.

METEOROLOGICAL RECORD.

For the week ending Nov. 11, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

DATE	Barometer.	Thermometer.			Relative humidity.			Direction of wind.		Velocity of wind.		We'th'r *		
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A.M.	8.00 P.M.	Daily means.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	Rainfall in inches.
S. 5	30.25	45	54	36	75	69	72	W	N	10	4	C.	F.	0
M. 6	29.76	48	52	43	72	84	78	S	W	9	12	O.	R.	.15
T. 7	29.76	42	44	39	73	96	84	N W	N	9	8	O.	O.	T.
W. 8	29.75	43	48	37	83	63	73	N W	W	7	12	O.	F.	0
T. 9	29.96	40	46	35	62	71	66	W	W	14	11	C.	C.	0
F. 10	30.23	40	46	33	64	64	64	W	W	13	8	C.	C.	0
S. 11	30.20	40	50	29	58	57	58	S W	S W	6	13	C.	C.	0
Sum	29.99		49	36			71							.15

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. Sum Means for the week.

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING NOVEMBER 18, 1905.

E. A. VICKERY, assistant surgeon. Detached from the "Franklin," and granted leave until Dec. 1.

SOCIETY NOTICE.

NEW ENGLAND ASSOCIATION FOR THE EDUCATION OF NURSES. — A meeting of this association will be held at the Boston Medical Library, 8, The Fenway, Nov. 24. There will be a session at four P.M. and another at eight. All interested in the aims of this association are cordially invited to be present at these meetings.

R. C. CABOT, M.D., *President.*

RECENT DEATHS.

JOHN INNES FRENCH, M.D., M.M.S.S., died in Winchester, Nov. 18, 1905, aged forty-four years.

DR. EDWIN CURTIS BIDWELL of Vineland, N. Y., died on Nov. 15, at the age of eighty-four. He was graduated from the medical department of Yale University in 1841, and during the civil war served as surgeon of a New England regiment. For a number of years he had been pension examiner at Vineland. His discovery of the black rot fungus which threatened to destroy the grape growing industry in 1879 is said to have been of great service to fruit raisers.

BOOKS AND PAMPHLETS RECEIVED.

Atlas and Epitome of Diseases of the Skin. By Dr. Franz Mracek. Authorized translation from the German. Second edition. Revised and enlarged. Edited by Henry W. Stelwagon, M.D., Ph.D. Illustrated. Philadelphia and London: W. B. Saunders & Co. 1905.

A Text-Book of Clinical Diagnosis by Laboratory Methods. For the Use of Students, Practitioners and Laboratory Workers. By L. Napoleon Boston, A.M., M.D. Second edition, revised and enlarged. Illustrated. Philadelphia and London: W. B. Saunders & Co. 1905.

A Text-Book of Diseases of Women. By Barton Cooke Hirst, M.D. Second edition, rewritten and enlarged. Illustrated. Philadelphia and London: W. B. Saunders & Co. 1905.

Address.

"OUR FIRST PRESIDENT, DR. EDWARD A. HOLYOKE."*

BY FRANK HOLYOKE, M.D., HOLYOKE, MASS.

MR. PRESIDENT AND FELLOWS OF THE ESSEX SOUTH DISTRICT MEDICAL SOCIETY:

"There is so much Bad in the Best of us
And so much Good in the Worst of us
That it hardly behooves any of us
To talk about the rest of us,"

and yet you honor me with the pleasing task of addressing you in the memory of one whom I never had the pleasure of meeting, the same having been not only your first president but enjoying the great distinction of having been my great-great-grandfather, whose virtues, I regret to say, are not counted among the heirlooms in my possession; but it has been my good fortune to meet two persons who have seen him, one of whom was, of all our greatest modern poets, not the least, but in truth "the last leaf upon the tree," — our much beloved and world-famous, Dr. Oliver Wendell Holmes. I was once consulting him in his library while debating as to what course I should take preparatory to entering the Harvard Medical school; he stepped to his bookshelves and took down the "Memoir of Edward Augustus Holyoke, M.D., LL.D.," a volume which was prepared in compliance with a vote of the Essex South District Medical Society and published at your request shortly after his death, showing by what great love, respect and veneration he was bound to the hearts of his medical brethren. With that book in hand he compared my profile with that of the great Edward Augustus. More frequently comparisons are odious, but he did not make it so for me. "Yes," he said, "the same high forehead; same angle of nose, but that not so pronounced; much the same poise of the head." My bump of pride kept growing bigger and bigger only to be flattened out completely when with serious gravity he added, "But you lack that peculiar firmness of the lip which in him was so pronounced and speaks of character such as few men have."

Not only in those old Memoirs but in this year's most complete work, entitled the "Harvard Medical School," by Drs. Harrington and Mumford, we find very numerous allusions to the old doctor, of deepest interest to the profession in connection with the other great pioneer workers of those early days, who "were honored in their generation and were the glory of their times," and of whose history we are all so proud.

Dr. Holmes, while a student at Harvard, had met old Dr. Holyoke in the college yard at Cambridge after he had passed his hundredth year, and described him vividly; quite as represented by this silhouette which you have probably seen at the Boston Medical Library, as being small of stature but very erect and square shouldered; of determined mien though suave, polite and graceful in bearing, and wearing a carefully powdered wig.

"But the old three-cornered hat,
And the breeches, and all that,
Are so queer!"

In this silhouette you will note that he carried a cane, for after the age of thirty he gave up riding in the saddle, and thereafter always walked his daily round of visits of which in times of an epidemic his records, which were very carefully kept, show that he sometimes made over one hundred visits a day.

About twenty years ago, through the kindness of Mr. Andrew Nichols, I met at her home on Maple Street, in Danvers, a very charming lady, Mrs. Elizabeth M. Putnam, the late widow of Col. Jesse Putnam, at that time one hundred and three years of age, who in her youth lived in Salem, a close neighbor to Dr. Holyoke; and she told me that the "dear old doctor was a little man and a great man; straight as an arrow both morally and physically; very polite to all and considerate of his patients; that in making his visits he invariably left his hat on his cane in the hall that he might not forget the cane; but," she said, "he was so different" (and here perhaps is the secret of his making one hundred visits in a day without the aid of either a "bike" or an "auto"), "so different from the doctors now-a-days, in that his calls never lasted over fifteen minutes; oftener not more than five, whereas the doctors of to-day come and sit and sit and talk and talk until one is bored to death."

So much have I learned, and yet so little, from those who have met and talked with him who was the first president of this society; the first president of The Massachusetts Medical Society; the first upon whom Harvard College conferred the degree of M.D. (and later the LL.D.), and certainly one of the first in the hearts of his countrymen; chosen by your society primarily because he was a gentleman of the highest type, one of the most eminent physicians of his day, and also a surgeon of high repute locally, having performed a difficult operation even after his ninety-second birthday. (Did any one mention chloroform?)

He was great enough to receive the young physician kindly, giving him encouragement and protection. Temperance and cheerfulness were marked characteristics and the chief secret of his "vigor of body, purity of mind, unclouded reason, sentiments refined." And of such nobility of character was he that it is written in your society's Memoir of him, that "all who knew him regarded him as having reached a height of moral rectitude as elevated as was ever attained by uninspired human nature."

Devoted to his church he was, and in his last years when his hearing was impaired, he used to stand on the steps of the pulpit that he might "hear the parson pray and preach."

Your thoughts inspired by your undying reverence for him who laid the foundation stone of character, which The Massachusetts Medical

* Response to the toast given Nov. 21, 1905, before the Essex South District Medical Society at its centennial celebration.

Society has always held, certainly bring him nearer to you to-day; and indeed he might possibly have been with us, according to the views held by a friend of mine, a member of the Christian Temperance Union, who, deprecating his custom of taking his mild toddy in his more advanced years (which he did, by the way, with as scientific a principle as characterized all his acts), remarked that if he had not yielded to such a vice he might have lived, no knowing how long. The old doctor enjoyed a good hearty laugh, and I think this would have pleased him hugely.

That by reason of his careful scientific investigations, he had the satisfaction of helping others to fill their coffers, is evidenced by our finding in an old family scrap-book a clipping from the columns of one of the very few but excellent newspapers of his day, an advertisement by a certain J. Gales & Son for the sale of their "Sal Æratus." introducing it to the dear public with gospel truth, by stating that "Sal Æratus is a chemical preparation from the well-known article Pearl Ash, purified and highly charged with carbonic acid gas (fixed air.) This valuable process was discovered by the venerable Dr. Holyoke of Salem, Massachusetts. His communications upupon this subject may be seen in Dr. Thacher's Dispensatory and in other Medical and Scientific works." Then it goes on to state what an agreeable, effervescing saline draught may be made by adding a small teaspoonful to a glass of water with lemon juice or vinegar; "each bottle containing enough for seventy drinks, at fifty cents per bottle."

That he was also fond of other arts and sciences than medicine is shown by the fact that he was among the original members of the American Academy of Arts and Sciences and was at one period its president. He was chosen a corresponding member of the Imperial and Royal Agrarian Academy of Florence.

He was, at the time of his death, the president of the Salem Athenæum; the Essex Historical Society; the Institution of Savings, and of the Salem Dispensary; but his profession was always of paramount importance, and he was most punctual in his attendance at the stated meetings of both the District and State Medical Society, and to both contributed much from his rich store of knowledge.

While writing his "Ethical Essay," which he completed after his hundredth year, he always stood at a high desk, and when called to his meals would express surprise that the time had passed so rapidly. Now he must have been of pretty tough fibre, and no wonder, for he practised in Salem where he certainly indulged occasionally in "Ye famous Gibraltar of Salem Towne"; and his great-great-grandfather, Edward Holyoke, formerly of Tamworth in Warwickshire, England, first settled in the year 1638 in the town of Lynn, whose inhabitants — to say the least — are a hardy race and have had an abundance of pure water to drink, from a spring bearing his name.

The old Englishman's good son Elizur, the hero of Dr. J. G. Holland's story of "Bay Path," and for whom Mt. Holyoke was named, became one of Springfield's most influential men and took active part as captain in the beginning of King Philip's war.

The doctor's father, Edward Holyoke, while settled as minister of the gospel at Marblehead (where the doctor was born), was elected President of Harvard College in 1737, and President Eliot tells me that, next to himself, Edward Holyoke held the chair longer than any other president; that is, for a period of thirty-two years or until the time of his death. You perceive the quality of toughness was inherited.

His "Ethical Essay" and also his toast to The Massachusetts Medical Society, presented by him at a public dinner given in his honor by the Faculty of Boston and Salem and vicinity, on his centennial birthday, Aug. 13, 1828, both show that "he retained the power of using his intellect with vigor and energy and of communicating his ideas intelligibly beyond his one hundredth year," which is considered a most remarkable circumstance as happening to so eminent a physician.

In giving his toast, "The Massachusetts Medical Society," he had equally at heart all the factors of that great society, and particularly the Essex South District Medical Society. In his words, "May it flourish and prosper, may it continue to improve the art for which it was instituted to the utmost of its wishes, and be the means under Providence of alleviating the Pains and Evils of Life, & promoting the Happiness of Society by suppressing Quackery, and rendering the Business of the Profession as perfect as the Nature of Things admits. And may each individual of the Society and every other Gentleman here present enjoy Health and Prosperity, & the pleasing Consciousness that he has contributed somewhat to the Advancement and Improvement of the public Welfare."

Original Articles.

A CASE OF DIABETIC COMA WITH RECOVERY UNDER ALKALINE TREATMENT.*

BY GEORGE G. SEARS, M.D., BOSTON.

JOHN N., thirteen years old, was transferred to the First Medical Service on Feb. 25, 1905, from the Parental School, where he had been under observation during the previous four months. He had suffered from excessive hunger and thirst and had passed large quantities of urine. His strength had steadily failed and his weight had fallen from seventy-five to fifty-nine pounds. During the past three days he had complained of epigastric pain and had grown weaker and duller.

Examination showed an undersized, emaciated boy in a semi-comatose condition, from which he could be aroused with difficulty. His breath smelt so strongly of acetone that the odor could be detected outside the door of his room. The skin was dry, harsh and everywhere covered with fine, bran-like scales. A purpuric eruption was present, especially over the abdomen, which was very prominent and marbled with large

*Contributed to the fifteenth series of Medical and Surgical Reports of the Boston City Hospital.

veins. The liver and spleen were both felt below the costal margin. The extremities were cold and somewhat cyanotic. The pulse was rapid and barely perceptible at the wrist. Respirations 30, deep and full. Temperature 99°. Pupils dilated, but reacting to light. Knee jerks absent. Urine, pale, acid, sp. gr. 1.0333; albumen, a trace. Sugar 5.3%. Acetone and diacetic acid present. The sediment contained occasional hyaline and fine, granular casts. Amount in the first twenty-four hours after admission, 156 oz.

Immediately after entrance, under the direction of Dr. W. L. Barnes, the house physician, he was given stimulants, and eight ounces of sterile salt solution, containing bicarbonate of soda almost to the point of saturation, were injected under the skin of each breast. After a cleansing enema an attempt was made to introduce more bicarbonate of soda by the rectum, but the attempt was unsuccessful. A solution of the same drug, in the proportion of a heaping teaspoonful to the tumbler, was ordered to be given by the mouth to the limit of his capacity. No record of the amount was kept, but, as he was very thirsty, large quantities were taken. His stupor rapidly decreased, but he remained drowsy for several days. Convalescence was interrupted on March 12 by the onset of severe general convulsions, probably of uremic origin, as the amount of urine which had previously been large, eight to eleven pints in twenty-four hours, suddenly diminished to about three, and hyaline and fine granular casts appeared in enormous numbers in the sediment. No blood was found and the albumen was not markedly increased.

In spite of the large doses of alkali given, the urine remained persistently acid throughout his stay in the hospital. Sugar varied between 1% and nearly 3% under a diet which contained a little bread and considerable quantities of milk. Acetone was more frequently present in the urine than absent, but its odor persisted in his breath only a few days after entrance.

The only other complication of note was the occurrence of suppuration at the site of the hypodermic injections; on the morning after they were given there was marked swelling, redness and tenderness over each breast. Palpation gave the sensation of an air cushion, and crepitation was present. The injections were given by means of a glass flask used as a fountain syringe, and no leak in the apparatus was apparent. Incision was later required and the abscesses were long in healing.

He weighed seventy-five pounds in May, and when last seen in July was in fair condition.

A search through the literature has revealed but few instances of recovery from diabetic coma as a result of any form of treatment. Cases of partial success have been reported by Fagge,[1] Taylor,[2] Taylor and Goodhart,[3] Dickinson,[4] Hesse,[5] Wolpe,[6] Freiberger,[7] Germar,[8] Troje,[9] Magnus-Levy, Chadbourne,[10] Lépine,[11] Besson,[12] Young,[13] Burghart,[14] Rosenstein,[15] and others. Of these Fagge's is the most interesting, as it initiated a new form of treatment and was the most successful. Acting on the assumption that the increased viscidity of the blood was the exciting cause, he injected a solution of salt and phosphate of soda. The patient regained consciousness, but relapsed and died comatose three days later. Fagge attributed the fatal ending, probably erroneously, to an overdose of codeia. Stimulated by this success and under the influence of the same theory, enormous quantities of fluid have been thrown into the blood current; in Dickinson's case, for example, 106 oz. were injected at one time and 350 at another, two days later. Some improvement was noticed at first, but death was postponed but a short time, if at all, and at the autopsy the tissues were found flooded with fluid.

The results in all were transitory; the progress toward death in coma was interrupted by a return to consciousness, more or less complete, which lasted at the longest but a few days. The improvement does not seem to have been dependent on the form of medication introduced, but was the consequence of the stimulating effect of intravenous injections, very probably aided by the dilution of the poisons circulating in the blood.

In the following cases, of which a brief abstract is given, as they are not all free from possible error as to the diagnosis, complete recovery from coma was obtained:

Case I. (Oliver.[16]) A man thirty years old, who had been a sufferer from diabetes for fully eight months, and under hospital treatment for about three weeks, returned a few hours after discharge in a state of coma, with a pulse of forty-five. No mention is made of the character of his respiration. His urine was not examined until the following day, when it contained sugar, but no acetone nor albumen. The amount was 21 oz., instead of 140 to 200 oz., when first admitted. After transfusion of a pint of salt solution he revived, and was doing well at the end of twenty-eight days. A local bronzing of the skin, previously noticed, became more marked after the attack. Six days later he complained of numbness in the right hand, with slight anesthesia. Distinct paresis of the extensor muscles with wrist drop was present.

Case II. (Roget and Balvay.[17]) An hysterical male, twenty years old, of nervous antecedents and with a previous history of alcohol, syphilis and an injury to his head, came under treatment for various symptoms referable to the nervous system. No sugar was found till July 4, eleven days after admission. On Aug. 1, symptoms of coma came on, preceded by convulsive movements chiefly of the left side. The odor of acetone was noticed in the breath. The urine showed 8.33 gm. of sugar, a trace of acetone and 2.3 gm. of oxybutyric acid per liter. On the afternoon of Aug. 4 a liter of water containing 7 gm. of chloride of soda was injected intravenously. At midnight there was slight improvement, but the next morning coma was complete and was attended by epileptiform convulsions. In the afternoon two liters of the same solution were given under the skin, and this was repeated several times during the next three days, and copious draughts of an alkaline water were given. On Aug. 12 he had complete possession of his faculties, and sugar, acetone, diacetic and oxybutyric acids had disappeared from the urine. Death occurred four months later from purulent pleurisy.

Case III. (Ravaut.[18]) A woman, twenty-nine years old, with tumor of the pineal gland, acromegaly and diabetes, was several times rescued from threatened coma by the administration of soda bicarbonate (30 to 40 gm. per diem) and subcutaneous injections of a 1% solution of the same drug.

Case IV. (Elliott.[19]) A man seventy-six years old, suffering from diabetes and chronic nephritis, began on March 26, 1902, to show signs of diabetic toxemia manifested by somnolence, constipation and the acetone odor, but only a trace of diacetic acid was present in the urine. Coma deepened until there were only two or three lucid intervals in the twenty-four hours. The urine then contained urea, 301 gr.; sugar, 2%; albumen, 1%; by bulk, acetone and diacetic acid. Amount, 70 oz. Under cathartics, colonic irrigations with normal salt solution and "large quantities" of soda bicarbonate by the mouth and rectum, he gradually improved, and on April 6 was

able to sit up and was free from his acetonuria. He died twelve days later from uremia with slight convulsions.

CASE V. (Stern.[20]) A woman, aged sixty-eight, with arteriosclerosis, in partial coma. The urine contained sugar, 3.22%, acetone, diacetic and oxybutyric acids. Bicarbonate of soda, 5 gm., was given every hour by mouth, and calcium carbonate, 2 gm., in a liter of water, every four hours by rectum. The symptoms cleared up on the third day, and acetone and diacetic acid disappeared from the urine. Two months later she had a similar attack which yielded to similar treatment, but death occurred in collapse a few days later.

CASE VI. (Stern.[20]) A woman, sixty years of age, apathetic and somnolent, with acetone odor to the breath. Sugar, 4%, acetone, diacetic and oxybutyric acids were found in the urine. Large doses of calcic carbonate were given by mouth and rectum and on the fourth day the somnolent condition was almost completely gone. She remained well for two weeks, though the diacetic acid persisted. The symptoms then returned, but subsided under similar treatment. Six weeks later a more severe attack came on, in which the bicarbonate of soda was given in addition to the lime salt. The patient again rallied, but died from exhaustion within a few days.

CASE VII. (Reynolds.[21]) A man "with the usual signs of rapidly approaching coma." His breath and urine smelt strongly of acetone. The latter reacted to the perchloride of iron test, contained considerable albumen and less sugar than usual. Influenced by Fagge's example, an effort was made to dilute the blood. As he was able to swallow, an aperient was given, and he was ordered to take a gallon of fluid during the night, and 60 gr. of citrate of potash every hour. He was slightly better the next morning, and the treatment was continued for another twelve hours, the citrate of potash being diminished. In three days all symptoms of coma had disappeared, and he was subsequently discharged.

CASE VIII. (Reynolds.[21]) A man in a "dangerous condition" with "marked albuminuria, slight drowsiness and breathlessness, but no characteristic pain in the stomach." He was ordered castor oil, large quantities of fluid, and from 30 to 60 gr. of citrate of potash every hour. In two days the acetone odor had disappeared, and the ferric chloride test was negative. Ten days later albumen was no longer present. He was in fair condition two months later.

CASE IX. (Grube.[22]) A man, forty-nine years old, diabetic for two years, developed on June 25, 1903, well-marked coma with acetone, diacetic and oxybutyric acids in the urine. He responded to loud calls by slowly opening his eyes. Being able to swallow when carefully fed, he was given 5 gm. of bicarbonate of soda hourly for forty-eight hours. His food was cut down to two liters of milk a day. During the first night he had two well-marked asthmatic attacks. The following morning the breathing was normal, and at midnight he recovered full consciousness, and the odor of acetone, which had been very marked, was scarcely perceptible. The urine was neutral on the 27th of June, and on the 28th was alkaline. He was able to return to England in the middle of July.

CASE X. (Chauffard.[23]) A man, diabetic, who had begun to complain of headache, dizziness, melancholia and inability to think. The urine had diminished in amount and acetone was present in large quantities. Coma seemed imminent. Under a milk diet and 20 gm. of bicarbonate of soda daily, the symptoms passed off in less than forty-eight hours, but the urine showed no diminution in acidity until 300 gm. of the drug had been taken.

CASE XI. (Lépine.[24]) A man, thirty-seven years old, who had lost ground in spite of treatment covering several months and including the daily administration of more than 20 gm. of bicarbonate of soda. His appetite and strength diminished and finally a marked increase in the respiratory movements was noticed. This was interpreted as a sign of approaching coma, and two liters of salt solution containing 10 gm. of bicarbonate of soda to the liter were injected intravenously. As a result the excretion of acetone and diacetic acid was at least tripled in amount. The patient regained his appetite and strength.

CASE XII. (Minkowski.[25]) An eleven-year-old girl, who for a year and a half had suffered from severe diabetes, and was passing four or five liters of urine containing 7-8% sugar, ¾ gm. NH_3 per day and much oxybutyric acid. The ferric chloride reaction was marked. Following an abrupt change to a strictly nitrogenous diet, coma developed. After ineffectual attempts to inject bicarbonate of soda subcutaneously, it was given by the mouth, and up to the following morning she took 100 gm. The sensorium was then clear, but her breathing was deeper than normal and the urine was still acid. The soda was continued with satisfactory results. She remained under observation for two months owing to the formation of an abscess at the site of the attempted injection.

CASES XIII AND XIV. Naunyn[26] records the case of an eight-year-old boy, in whom threatened coma was three times averted by bicarbonate of soda, given by mouth and rectum. The patient died in the fourth attack, the production of acid having become so great that it was impossible to neutralize it. Magnus-Levy speaks of another case of Naunyn's in a girl twelve years old, as a remarkable instance of recovery under the use of alkalies, but gives no details.

CASE XV. (Magnus-Levy.[27]) A boy, thirteen years old, with severe diabetes and nephritis. His urine contained large amounts of acetone, diacetic and oxybutyric acids. He survived two attacks of coma within a month, under large doses of bicarbonate of soda, as high as 210 gm. a day. A week after the second attack threatening symptoms were again averted by the same means.

CASE XVI. (Magnus-Levy.[28]) A girl of thirteen, with severe diabetes and marked acidosis, for which she was taking daily doses of 9-18 gm. of bicarbonate of soda. Nevertheless, as a result of a feverish rhinitis and angina, coma of the typical dyspneic form developed. For two days after the beginning of the dangerous symptoms the diet was limited to milk, and bicarbonate of soda was given. She retained on the first day 2.4 liters of the former and 109 gm. of the latter, and on the next 4.5 liters and 102 (?) gm. respectively. Improvement was rapid, and within forty-eight hours the coma had fully disappeared and the urine had become alkaline. She remained under observation for two months, during which time the urine was acid in spite of continued alkaline treatment.

In addition to these, Zinn briefly mentions the case of a female patient who received on one occasion an injection of 18 gm. of bicarbonate of soda in 5% solution, and on another 17 gm. In both instances she came rapidly out of her coma.

These cases include all grades of coma, from a slight drowsiness or depression to complete loss of consciousness, and have been presented at their face value on the authority of their reporters. The diagnosis, however, does not appear to have been established in a number of instances beyond a reasonable doubt. In some the histories do not harmonize with the usual symptoms of true diabetic coma, while in others, especially among the older patients, other causes of cerebral disturbances, arteriosclerosis, apoplexy, tumor, syphilis, hysteria or uremia could not always be eliminated. The diagnosis of threatened coma is not always easy, and it is not impossible that in some it was assumed on insufficient evidence. Disturbances of digestion and general depression may precede its onset, but it is not a necessary sequence, and recovery from such conditions has not infrequently occurred spontaneously. Few as the recorded cases of recovery from diabetic coma are, they are enough to show that we are no longer helpless in its presence. The recognition of the part which acid intoxication plays in the natural history of the disease has made it possible frequently to postpone the onset of coma for indefinite periods, occasionally to arrest its progress at its beginning, and rarely to rescue a patient from its fully-developed stage. But as alkalies

are purely symptomatic remedies which combat effects and not causes, they can only be of use before changes in the tissues have occurred, which prevent their recovering their normal functions, or, to quote Naunyn, before the flow from the acid springs within the organs is so copious that the alkaline stream of blood is powerless to make headway against it.

Acting as a chemical antidote it is necessary that the dose of alkali should be sufficient to neutralize the offending acids, and the greater success which has been obtained in children is probably largely due to the greater relative amount which can be given. Such cases as Lépine's, however, in which the diagnosis is evident and in which but 20 gm. of bicarbonate were given, show that when administered early enough, quantities which must be entirely inadequate for complete neutralization may be efficient by neutralizing the excess of acid to allow the organism to resume once more its oxidizing processes.

While the subcutaneous tissue, the veins, the rectum and the stomach have all been used with success either alone or in various combinations, these cases show that the method of administration is much less important than the amount. Hypodermic injections have the objection that they are usually followed by suppuration and necrosis. The intravenous route is free from this danger and its stimulant effect may be of great advantage. Large doses by the mouth may produce vomiting and diarrhea, but it is noteworthy that some of the most satisfactory cases were treated in this way alone. While the measure of success may be sought in the ability to make the urine alkaline, coma has been checked in spite of a continued acid reaction.

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RUPTURE OF THE INTESTINE.*

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Cases of rupture of the intestine from blows upon the abdomen are of natural interest to the surgeon, for the reason that not infrequently the intestines may be ruptured and the injury fatal unless immediate operation is done. The first operation for ruptured intestine was performed by Bouilly in 1883, the first successful operation by Moty in 1889.

The abdominal viscera, although they have no bony wall to protect them in front, are protected from injury by their position, and by the immediate, involuntary contraction of the abdominal muscles which takes place the moment a coming blow is seen or expected. In injuries sustained through contests of physical strength blows upon the abdomen are comparatively rare on account of the protected position in which the abdomen is held.

I think that there can be no question, from a study of these cases, that, where rupture of the intestine takes place, the intestine is generally caught between the body which causes the blow upon the abdomen and one of the bony structures which forms its posterior walls. The abdomen must be, as it were, taken unawares, delivered a rapid, violent blow before the muscles have time to contract, and the intestine compressed between the impinging body in front and the vertebræ or pelvic bones behind. There is no question but that the actual pinching of the intestine between the body which causes the blow and the bone may rupture it. There is also the probability that the catching of a distended coil of the intestine between the impinging body on the outside and the vertebræ or pelvic bones behind may suddenly cause the gas in that coil to burst out through the intestinal wall, thus rupturing the intestines in another way.

The evidence of this is seen in the fact that we find lacerations of the peritoneum without injury to the muscular and mucous coats which have the appearance of having been caused by overstretching, and in actual ruptures of the intestines the peritoneal tears sometimes extend to either side some distance beyond the actual orifice.

In order to allow these ruptures by bursting to take place, both arms of a loop must be caught and compressed, otherwise the gas will not be pent in. Such conditions are obviously present in case of a hernia, the loops being grasped in the ring so that the gas cannot escape, and the intestine, having no muscular covering, simply the skin and the fascia of the hernia, being exposed to direct compression between the injuring body on the outside and the pelvic bones or the aponeurosis, from which it cannot slip away, behind. It is obvious that intestine shut up in a hernia may be ruptured by a slighter blow than that free in the abdominal cavity.

Ruptures due to catching of the intestine between the pelvis or vertebral column and the impinging object vary in size, and may be even extensive tears of the gut (Case VI). Those due to bursting of the gas through a loop present a small, round perforation (Case XII), with often a more extensive peritoneal tear. It is remarkable to what an extent, even when the tear is a large one, the everted, swollen mucous membrane will plug the opening and prevent the extravasation of

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feces. This is also prevented by the contractions of the circular fibres immediately above and below the injury. In only a few of the cases here reported were solid intestinal contents found in the abdomen. Commonly only a little fluid, necessarily contaminated with the bacterial flora of the intestine, escapes, and starts up a local peritonitis, evidenced by pain, tenderness and muscular spasm. The development of the general peritonitis and septicemia may be delayed for hours, but it is none the less inevitable unless the opening is sutured and the peritoneum cleansed. Ruptures from catching the intestine against the bony wall may be in any relation to the mesenteric border, and may be accompanied by rupture of the mesentery. Those due to bursting are usually opposite the mesentery.

The writer has studied the history of nineteen cases of rupture of the intestine which have been treated in this hospital, and the etiology is to him extremely interesting. These nineteen cases are due to causes which fall into four classes. The first class, and the one which first directed the writer's attention to the cases, comprises those ruptures of the intestines which are caused by blows upon the abdomen by a piece of board thrown by a circular saw: Cases I, VI, VIII and XVIII.

Here the injured patient is feeding a board to the rapidly revolving saw, standing, presumably, with his abdomen relaxed, against the end of the table. Suddenly a loose piece of board is caught by the saw and slid along the table with enormous velocity against his abdomen before his muscles have time to contract to protect it. I have come to regard such an injury as this as almost diagnostic of rupture of the intestines.

It is rather interesting that so large a proportion as four out of the nineteen cases should have been due to this accident, and the knowledge of that fact is valuable to the surgeon, who should be on the lookout for this injury wherever an accident of this character occurs. All of these cases were conscious of having had a severe blow, but two of them walked about after the accident. One went to a physician's office, was told there was nothing the matter, and went to work the next day. A few days later the physician whom he had consulted happened to be in the pathological department of this hospital, and saw his patient on the autopsy table. He had died in this hospital from rupture of the intestine. Two of the five cases that the writer has personally operated upon for rupture of the intestine were due to this accident.

The second of the four classes into which these cases fall are blows upon a hernia. This class also includes four cases. Here, as stated above, the conditions are such that a slight blow may be sufficient to rupture the intestine. Case IV is interesting in this connection. Here an engineer was at work over his fire with a heavy bar, when the bar got caught, then sprung free and struck the pad of his truss. The blow was not a heavy one, but was sufficient to rupture the intestine. In this case the seriousness of a blow over a hernia was not realized; the patient was not operated upon for twenty-four hours after the injury and died of general peritonitis.

The third class of cases is due to horse-kicks on the abdomen. This class includes three of the nineteen. The kick of a horse furnishes all of the conditions necessary to rupture the intestines, namely, a blow both rapid, violent and unexpected, so that the muscles have no time to protect the intestines against it.

The fourth class includes five of these nineteen, and the injuries are due to falls. Three of them were falls from a considerable height, and were accompanied by concomitant injuries. These cases are naturally serious, the mesentery is frequently torn as well as the intestines; and they are necessarily apt to be fatal. Two of the cases were due to a collision between the pole or shaft of a vehicle and the patient, who was riding a bicycle. Here the favorable conditions for rupture of the intestines are sufficiently evident. One case was that of a man with a distended abdomen, who fell, striking his abdomen against a curbstone when he was drunk. In cases of this kind it is probable that distention is a favoring element to rupture.

Diagnosis. — The symptoms which at first ensue upon a rupture may be, and often are, so slight that the surgeon feels a false sense of security. He judges that probably no harm has been done, and the patient is left until a general peritonitis is developed before he is operated upon. It is for this reason that it seems to me that a knowledge of the common etiology of these cases is important.

In cases which have been subject to injuries of this sort, an exploratory laparotomy should be done without waiting for an absolute certain diagnosis, which also means the almost certain death of the patient. After these blows upon the abdomen by a board from a circular saw, or by a horse's hoof, the patient is very often faint, sometimes vomits, and then the rapidity with which the symptoms come on depends upon the rapidity with which the intestinal contents are poured into the abdomen. If the rupture is a small one, as not infrequently happens, it may be nearly closed by protruding mucous membrane. Here the pain, tenderness, muscular spasm and temperature indicative of peritonitis may develop gradually, as in the case of general peritonitis, in which the patient went to work the day after the fatal accident happened to him. Or, if the rupture is a large one, the rapid extravasation of intestinal contents brings into immediate evidence the symptoms of general peritonitis and leads to immediate operation.

The peritonitis must be quite general before the patient looks badly. The pain, tenderness, muscular spasm and slight rise in temperature, and the fact that the patient is getting worse, should be sufficient for immediate operation without waiting for the facies which practically always indicates that peritoneal sepsis has progressed to such an extent that no operation will control it.

The ruptures here reported, all but one, concerned the small intestine, and most of them the

lower part of the small intestine, probably because the coils of the small intestine lying in the lower part of the abdomen are there exposed to compression against the pelvic bones as well as against the vertebræ. The only rupture of the large intestine in this series was Case XIX, where the injury resulted from a fall from a team, the patient being run over by the wagon wheels. Here the injury was to the splenic flexure of the colon, which was not improbably caught between the ribs and the vertebral column or between the wheel and the vertebral column, as the lower ribs were compressed.

Makins [1] in an extremely interesting analysis of twenty-one cases occurring at a London hospital during ten years, found that sixteen involved the small intestine and five the large intestine. In nine the point of impact was indicated by a local bruise or abrasion, and in eight of the nine this local injury was below the umbilicus. He concludes, I think correctly, that blows below the umbilicus are more apt to rupture the intestine, because the bony walls of the pelvis, as well as the vertebral column, here offer counterpoints for compression.

Blows above the umbilicus, exactly in the median line, may rupture the intestine by compression against the vertebral column. Blows in the lumbar region are more apt to cause rupture of the solid viscera, kidneys, liver or spleen. Analysis of these cases shows that in eleven the injury was below the umbilicus. In six there was a definite contusion of the abdominal wall; in four the blows were upon herniæ, and in one the blow was known to have been in the left iliac region. Two only were known to have been blows above the umbilicus. One case (Case XV) was a tear due to a blow on the back and fall forward, and in the remainder the place of the injury is unknown.

The rupture of the intestine, in my experience, is usually found directly under the spot where the blow upon the abdomen was received, and slight reflection will make it evident that, where the intestine is ruptured, here the abdominal wall is also contused and may contain a hematoma. These two facts are the reason for what seems to be an important indication for treatment.

If there is a slight contusion upon the abdominal wall to indicate where the blow fell, or if there is any other definite evidence of the location of the injury, instead of incising over the median line, we should make an incision over this spot. This method of procedure was advocated by Spaeth in 1887, but has not been concurred in by most of the subsequent writers. The writer's personal experience, however, leaves him no doubt regarding the advantages of this method.

In Case VI of this group the blow had been received in the left groin from a board from a circular saw. The writer made the incision in the median line, easily found the rupture, sutured it and drained the abdomen. The patient died from an abscess due to the infection of a hematoma.

Directly under the seat of the blow, which was in the lower left iliac region, as was indicated by a contusion of the abdominal wall, an abscess was found at autopsy just under the peritoneum, undoubtedly due to an infected hematoma. If the writer had incised over the seat of injury, he could not have failed to find and clear out this subperitoneal clot. By cleaning it out and draining the cavity he has no doubt that this patient's life could have been saved.

In Case XIV, where the patient suffered a horse-kick over a right inguinal hernia, that is what was done. The incision was made directly over the hernia. The edematous and ecchymotic tissues were incised and drained, whereas, had the incision been made on the median line, even though the rupture had been found and the peritonitis averted, a fatal infection might have taken place in the hernial sac and surrounding tissues. These cases seem to indicate clearly that we should incise over the point of injury. Not only will we be able thus to treat concomitant injuries to the parietes, but in nine cases out of ten the ruptured coil will be found directly under the incision, and it will not be necessary to drag it through peritoneum which is perhaps not already infected.

In regard to these cases of blows upon a hernia, when the blow has ruptured the intestine the contents escape into the hernial sac, and not infrequently the coil itself, emptied and collapsed, slips back into the peritoneal cavity. This was the case in Case XIV, also in Case II, where the rupture on autopsy was found in the abdomen, though some of the intestine remained in the hernial sac.

In Case III the ruptured intestine had slipped back into the abdomen, leaving the hernial sac empty of bowel, although containing intestinal contents. In Case IV, also, the two portions of the intestine were found in both cases in the abdomen and not in the hernia; therefore, we may be fully assured that in ruptures in a hernia we shall probably find the rupture in the abdominal cavity and not in the hernial sac. It will probably lie just above the inguinal ring, and can best be reached by making the first incision over the hernial sac and carrying it upward into the abdominal cavity.

Fifteen of these cases were operated upon, three of the four that were not operated upon occurring before 1895 and the diagnosis not being made. In one of them there was no history of an injury, but autopsy showed that such an injury must have occurred. The only other case that was operated upon came to the hospital in a moribund condition, too late for operation to offer any hope. Of the fifteen cases, seven recovered and eight died, which seems to me not a bad showing considering the nature of the injury. Of these that recovered all were operated upon within fifteen hours, three being operated upon within three hours of the accident, one within four, one within nine, one within twelve, and one within fifteen hours of the accident. The only case which was operated upon early and died was Case VI, which, as has been stated above, died from an infected hematoma.

[1] Annals of Surgery, 1899, xxx, 5, p. 137.

In falls from heights the extent of the other injuries is apt to mask the abdominal condition, and even where rupture of the intestines is recognized and successfully operated upon, the concomitant injuries are apt to cause death. Three of the four cases in which the injuries were caused by falls from heights died.

In Case XV, which had been previously reported by Dr. Bottomley,[2] the injury was due to a patient being thrown on his face by a blow in the back by the pole of a team. Here the rupture was close to the duodeno-jejunal junction, and it seems as if the movable intestine was actually torn from its fixed attachments. This case, as far as is known, is a unique one. A knowledge of the etiology of these cases seems to me especially important for hospital surgeons, for the reason that, when they are informed by their house officers that a certain kind of accident has occurred, even in case the house officer may not suspect its seriousness, they may find it wiser to see the case than to await the development of symptoms which bring a certainty of diagnosis and at the same time a prognosis which for certainty, if not for character, leaves nothing to be desired.

The writer wishes here to thank the visiting surgeons in charge of the cases here reported for the privilege of including them in this report. Four of these cases have been reported by the writer and Drs. Nichols and Bottomley in a previous City Hospital report, but are included in this series in order to make it complete.

CASE I. Dec. 10, 1887. Dr. Bradford. D. M., twenty-five years old. About 9 A.M. was struck in the abdomen by a piece of timber three feet long which flew from a circular saw; in some pain; lies with legs drawn up; large bruise in right iliac region; vomited; distended, and died seven days after entrance.

CASE II. 1892. Dr. Gay, D. D., seventy. Has had hernia on right side for some years; is said to have been kicked by his son last night. On entrance his pulse was imperceptible; death in about twelve hours.

Autopsy. — Peritonitis and food free in cavity; rupture of jejunum, longitudinal in direction; one inch long, presenting pouting, everted edges. This rupture was in the bowel, about eight inches above the inguinal ring. The subcutaneous tissue about the hernial sac was filled with extravasated blood.

CASE III. March 13, 1895. Dr. Cushing. N. E. No history; could talk no English. A tense, very tender hernia in right side; in twenty-four hours developed peritonitis; death in four days.

Autopsy. — General peritonitis; rupture with everted edges, one and one-half inches long, ten inches above cecum; peritoneal surfaces above and below the rupture uniformly discolored and ecchymotic; hernial sac empty of bowel, but contained fecal matter.

CASE IV. Jan. 20, 1897. Service of Dr. H. L. Burrell, operated upon by Dr. Thorndike. J. N., an engineer, aged forty years, had had a hernia for years and had worn a truss. As he was at work over his fire with a heavy iron bar, the bar got caught and then got free, and struck the pad of his truss. The blow was not a heavy one. In five minutes he had to lie down, and in one hour he vomited and had general abdominal pain. Abdomen somewhat distended; tender in flanks; over right inguinal ring a slight amount of swelling and tenderness. Twenty-four hours after injury was operated. Fluid stained with fecal matter in peritoneal cavity; intestines red, in places covered with lymph; gas also in peritoneal cavity; two perforations of intestines found about four inches apart. Closed by suture; drainage by gauze into pelvis and lower splenic regions. Died afternoon of operation.

CASE V. Sept. 13, 1897. Service of Dr. Gay. C. F., thirty-one. Fell about thirty feet; marked shock; abdomen distended; distinct spasm; dullness in both flanks; vomiting; fracture of both bones of the left leg. Incision four and one-half inches long below umbilicus; peritoneum filled with grumous material. Perforation found high up in small intestine and closed with Lembert sutures. Fracture of pelvis at symphysis felt with finger in abdomen; lavage; drainage. Death about eighteen hours after operation.

CASE VI. Nov. 27, 1897. Service of Dr. Monks. Operated upon by writer. W. E., aged forty-seven. While at work, a piece of timber flew from a circular saw and struck him in the abdomen. He felt faint and vomited, but was able to walk about and soon felt better. Was taken home in a carriage, but soon after reaching there felt badly, suffering from abdominal pain and nausea.

Physical examination. — Looks sick; drowsy; abdominal wall retracted but very rigid; generally tender but more so in the left iliac region, where there is a slight contusion; dullness over pubes on both sides extending to left iliac region; operation about four hours after injury.

Incision from just to left of umbilicus, down nearly to symphysis; subperitoneal fat ecchymotic; a brownish, foul-smelling fluid in peritoneal cavity; an oval rent found in lower part of ileum, one inch by one-half an inch. A lead pencil sized perforation was found close beside the main opening. Intestinal contents free among intestines, and fibrin flakes here and there. Resection and end to end Lembert suture was done at point of injury; irrigation and drainage of pelvis with gauze and a glass tube. After two days' vomiting the patient began to improve, and did fairly well for three days. Then the pulse and temperature began to rise, and death occurred on the eighth day.

Autopsy showed an abscess cavity, evidently a broken-down blood clot, between the peritoneum and the ramus of the ilium and the bladder, on the left. This clot had evidently been infected by the intestinal contents, had suppurated and finally burst into the peritoneum. A small opening through the peritoneum was found on the abscess, and there was evidently a peritonitis spreading from this.

CASE VII. Dec. 1, 1897. Service of Dr. F. S. Watson. H. M. S. collided with the pole of a hack while riding a bicycle. Pole struck him in abdomen, throwing him several feet backward. Pain at first severe, but subsided; vomiting began about an hour and a quarter after the accident; abdomen tender; muscular spasm, especially on left. Operated immediately on entrance. Incision three inches long in median line above umbilicus. On opening peritoneum a small quantity of thin, bloody fluid escaped. A moderately large tear in the small intestine was dealt with by resection of the torn portion with a V-shaped piece of mesentery. End to end suture; lavage; closure of abdomen without drainage; recovery.

CASE VIII. Aug. 18, 1898. A. H., nineteen years old. Three days ago patient was struck in right iliac region, just above crest of ilium, by a piece of joist which was thrown by a circular saw; walked to a physician's office, who stated that there was no serious injury. The next morning felt well enough to go to work, but had to leave early on account of beginning of abdominal pain; walked home and vomited several times; entered hospital three days later; pulseless and dying of general peritonitis.

Autopsy. — General peritonitis; round perforation in small intestine, about 15 cm. above the ileocecal valve. Internally the mucous membrance shows a circular opening, with lacerations extending laterally transverse to the intestine; some slight hemorrhage in the neighborhood.

CASE IX. April 26, 1900. Service of Dr. Gavin. Operated upon by Dr. George H. Monks. P. C., thirty years, while riding a bicycle was struck by a team, one of the shafts striking him in the left chest and throwing him to the ground; unconscious; exact method of injury doubtful. On admission apparently no marked shock; abdomen rigid; nothing abnormal felt; constant vomiting. Operated within twelve hours. Median incision; stained, cloudy serum in peritoneum; irrigation; drainage, both flanks and median line. Death in twenty-four

[2] Medical and Surgical Reports of the Boston City Hospital.

hours. Post-mortem showed a tear three quarters of an inch in length a short distance below the duodenum.

Case X. July 20, 1901. Operated upon by Dr. Lund. M. P., seven years, male. Fell from bridge about 5 P.M., ran home crying, complained of severe pain in abdomen. Vomited once; had a chill and became feverish in the evening; slept fairly well and was able to get up for a drink of water in the morning; pain less severe; abdomen tender; no movement of the bowels. A physician was called who ordered the boy to the hospital.

When seen at the hospital, he lay with his legs drawn up; face pale; expression anxious; tongue dry and hands and feet cold. Pulse 140, weak and compressible; temperature 99.5°; abdomen not distended, rigid on palpation, especially on left side, where there was marked tenderness; ecchymosis over crest of left ilium.

An incision was made under ether anesthesia, twenty hours after the accident, over the outer border of the left rectus just below the umbilicus. On opening the peritoneum, there was an escape of dark brown serum containing a few flakes of fibrin. The intestines on the left side were injected, and presented flakes of fibrin on the surface. A coil was found in the left hypochondrium wrapped up in the omentum; this coil was torn from its mesentery for about three inches, and in its center was a large perforation. It was denuded of peritoneum. The damaged portion of the intestine was excised, the ends being brought together by a Murphy button, reinforced by a few sutures of fine silk. The mesentery was united by two silk sutures. The boy was in severe shock and pulseless during the latter half of the operation, which took thirty minutes. The abdomen was washed out and drained with iodoform gauze, and the wound was closed with sutures of silkworm gut. The drainage was carried into the left hypochondrium and into the pelvis.

The boy was stimulated freely but did not rally, and died two and a half hours after the operation.

Case XI. Dec. 21, 1901. Service of Dr. W. P. Bolles. Operated upon by Dr. Bottomley. A. DuF., eight years. Coasting, ran into a team; horse kicked him in the abdomen; operated within twelve hours; had vomited four or five times. Area of ecchymosis, with slight abrasion, between costal margin and iliac crest on right; slight ecchymotic area just to right of upper lumbar spines; no distention; dull on percussion everywhere, except in epigastrium; general tenderness and spasm most marked on right. Ether; median incision. Cloudy, slightly bloody fluid in peritoneum; perforation about one inch from mesentery and about mid-point of ilium, size of a lead pencil, with inverted edges; apparently not much escape of fecal matter. Suture of perforation; irrigation; drainage of pelvis and flanks; recovery. Dismissed from hospital Feb. 3, 1902.

Case XII. May 6, 1902. Operated upon by Dr. Lund. A. C., forty-six years. Seen in consultation with Dr. A. B. Brown of Newburyport and Dr. Spaulding of Salisbury. At 4.30 on May 5 he was thrown from his carriage; thinks he struck his abdomen against the whiffletree and possibly was kicked in the abdomen by the horse. When seen by Dr. Spaulding, at about 7 P.M., he had vomited; was in a state of moderate shock; pulse 100 and of good quality; had a small red spot about two inches to the right of the umbilicus; distinct spasm and tenderness on pressure over the right side of the abdomen. During the night he vomited three times, and the bowels could not be made to move by enemata.

In the morning he was found to be well; facies excellent; pulse 100 and rather compressible; temperature 100°. On pressure in the right lumbar region there was moderate tenderness and spasm.

Under ether an incision three inches long was made through the outer part of the right rectus, the center being just below the umbilicus. On opening the abdomen there was an escape of turbid serum. Coils of intestine below the incision were injected and coated with flakes of fibrin. On withdrawing several coils from the abdomen a perforation about the size of a lead pencil was found, which was partly closed by the pouting of the mucous membrane through it. This was closed by interrupted sutures of fine silk. The peritonitis was found to involve the pelvis and the right hypochondriac region, from which a considerable amount of turbid serum was washed out. After thorough flushing, the intestines were returned and the wound sutured. Thorough drainage was established by a glass tube and gauze drains at the lower end and the upper angle of the incision. Recovery.

Case XIII. Aug. 20, 1902. Operated by Dr. Nichols. A. A., twenty-two. At 5.30 he was kicked in the "pit of the stomach" by a horse. He was standing four or five feet from the horse's feet; was knocked down; lost consciousness for a moment. The immediate pain was severe, but increased later; vomited at intervals of fifteen minutes, and raised some mucous mixed with bright blood, about a cupful. He was brought to the Relief Hospital three hours after the accident.

He weighed about one hundred and eighty; was thin and muscular. Very restless, mind clear; lay flat upon his back with legs fully extended; face pale with a dusky tinge, looked pinched; tongue clean and moist; temperature, 99.6°; pulse, 100, fairly strong, regular but compressible. On the right lower abdominal wall was a very slight redness and abrasion. Abdomen slightly retracted; general abdominal pain and tenderness, not extreme, no point of marked local tenderness; abdominal muscles extremely rigid; slight dullness in right iliac region.

Diagnosis. — Rupture of intestine. Operated under ether three hours after accident.

An incision two and a half inches long was made in the median line half way between the umbilicus and the pubes. On opening the peritoneum, considerable cloudy serous fluid, tinged with blood, escaped. The intestine was very much injected and covered in places with small amounts of fibrin. An oval perforation, half an inch in length, was discovered in the ileum opposite the mesenteric attachment, eighteen inches from the ileocecal valve, from which fecal contents escaped. The incision was closed with a continuous right angled silk suture, reinforced with interrupted silk sutures. No further rupture was found. The peritoneal cavity was thoroughly washed and much fecal matter was found. Irrigation was continued until the fluid was perfectly clear. Drainage was effected by glass tubes and gauze drains. Recovery.

Case XIV. Sept. 24, 1902. Operated by Dr. Lund. F. J., twenty-eight. Admitted to the Relief Hospital about 1 P.M. Stated that he was kicked in the abdomen by horse at about 6 A.M. He was thrown ten feet and was unable to rise. Patient had a right inguinal hernia, probably containing a loop of the intestine. One of the horse's hoofs struck over the sac and the other struck the right lumbar region. No vomiting; slight nausea at times. Accident at Weston, Mass. On advice of a physician he was brought to the city on a stretcher by train.

When seen at the hospital, the patient was well developed and nourished; lips pale; cheeks drawn, pinched and pale; temperature 98.6°; pulse 68. Enema produced a good movement of the bowels. Chest negative; abdomen full but not distended; some muscular tenderness and spasm in lower half of abdomen, most marked in median line. Point of most tenderness over right external ring, where there appeared considerable swelling apparently connected with hernial sac.

At three o'clock under ether an oblique incision was made over the inguinal canal and the tissues about spermatic cord were found edematous and ecchymotic. The hernial sac was exposed and incised and found to contain clear fluid. Then the aponeurosis of the external oblique was slit up over the sac and incision carried up to the internal ring. Pressure on abdomen caused extrusion of turbid, light brown fluid from abdominal cavity. Incision, therefore, carried up through external and internal oblique and transversalis muscles, a distance of two inches, considerable turbid fluid escaping from the abdomen. Numerous coils of small intestine, some distended and some collapsed, deeply injected and partly covered with delicate flakes of fibrin were found. A laceration three quarters of an inch long was found opposite the mesenteric border, crossing intestine obliquely. After removing the fibrin from the edges of the laceration, it was closed with a double row of continuous fine silk sutures.

In one of the deeply ecchymotic spots in the neighborhood, along the mesenteric border of the bowel, it looked as though perforation were imminent. This was inverted and sewed with interrupted Lembert sutures, as was also another spot whose integrity appeared to be dubious.

No further injury was found, although several contusions of the mesentery were noted. The upper part of the wound was closed by silkworm gut sutures, drained by gauze and glass tubes. Convalescence was uneventful.

The incision was made into the hernial sac in this case for the reason that this was the known position of the blow upon the abdominal wall.

CASE XV. Operated by Dr. Bottomley. Fisherman, forty years old. Brought to the Relief Hospital; said he was struck in the back "just below the shoulder blade" by the shaft of a team, knocked down. Felt faint, but was not unconscious. Severe abdominal pain, chiefly above the umbilicus, followed the blow; walked about some; took a carriage to the ferry; after crossing, walked three quarters of a mile to his home where he took a cup of tea which brought on the first attack of vomiting. The pain increased and he called a physician who diagnosed the case as distended bladder, which he found, and sent the patient to the hospital. Only one attack of vomiting since accident, and only subjective symptoms, severe abdominal pain.

He was a well built, well nourished man; pulse, 92, but unsatisfactory in character; temperature slightly subnormal; lips pale, and countenance ashen and pinched. Severe pain, which successful catheterization did not relieve; abdominal wall not contused, was rigid, distended; muscular spasm and tenderness general; no dullness anywhere. On his back, over the left tenth rib, about three inches from the median line, was a contused area a little larger than a quarter, which was tender and indicated the point of impact of the shaft. Patient refused immediate operation until eighteen hours after the accident, when, having grown steadily worse, he consented. Then all signs of a diffuse general peritonitis showed, except vomiting. Pulse, 112 and weaker.

Under ether a three-inch incision below the umbilicus, and later extended two inches above the umbilicus, was made. Upon opening the peritoneum considerable dark brown fluid escaped, which was bile stained and contained many flakes of fibrin and particles of partly digested food. The small intestine presented an angry looking congested peritoneal coat and a general, very free formation of fibrinous exudate. A perforation, large enough to easily admit the tip of the forefinger, was finally found in the jejunum opposite to its mesenteric attachment; through it there was a very free escape of intestinal contents. Extending downward from it in the long axis of the intestine was a tear through the peritoneal coat of the bowel one and one-half inches long.

The closure of the perforation, by a purse-string suture of silk, was a matter of considerable difficulty. The longitudinal tear was repaired with a single row of the Cushing right angle suture. No other injury was found. Several ounces of Epsom salts were injected into the cavity of the small intestine. The peritoneal cavity was irrigated with hot salt solution, and the abdominal wall closed, except at the lower end, where space was left for the passage of two glass drainage tubes.

Patient failed rapidly during operation despite stimulation. The head of his bed was raised and he was given salt solution intravenously. He reacted rapidly and well; no vomiting followed; pain ceased; and by evening his pulse was better in quality than since his admittance. Six hours after operation, pelvis irrigated and more cloudy fluid and fibrinous exudate washed out. Rectal feeding started. He continued to improve until afternoon of second day, when a severe diarrhea set in. This was controlled by opium, but pulse began to rise rapidly. Reacted again, and on the morning of the third day his pulse was steady at 84. Went to pieces again in the afternoon and did not rally, but died about seventy-two hours after operation.

CASE XVI. Nov. 7, 1902. Service of H. L. Burrell. Operated by Dr. J. C. Munro. J. C., age thirty-seven, fell from a bridge twenty-five feet to the ground. Forty-five minutes later at Relief Station with marked shock; pulse, 80, regular; abdomen full, tender on left side; no external evidence of injury; one hour and forty-five minutes vomited. Operated two hours and forty-five minutes. Incision not specified; jejunum found ruptured in two places near together, with pouting mucous membrane; about five inches of bowel excised; Murphy button; thorough irrigation of abdomen.

Convalescence complicated by a pelvic abscess which was drained on Nov. 19. A fecal fistula followed. Discharged Dec. 26, with small sinus discharging no pus; in good general condition.

CASE XVII. March 14, 1903. Service of Dr. H. L. Burrell. Operated upon by Dr. Crandon. W. S., forty-six years, had been drinking brandy for four days previous to injury. For five days he had had no movement of bowels. Stumbled and struck abdomen against curbstone while drunk; got up and walked home. In six hours sobered off and began to vomit and suffer from abdominal pain; twenty-four hours later in very poor condition; distended abdomen; vomiting; pulse 140, almost imperceptible at wrist. Abdomen opened and brownish fluid washed out. Perforation not found at operation, as the patient was in too poor condition to do more than flush out hurriedly. Died in a few hours.

CASE XVIII. Nov. 3, 1904. Service of Dr. H. L. Burrell. Operated upon by the writer. H. L. P., twenty-one. While working at a circular saw a piece of board lying beside the rapidly revolving saw was caught and thrown violently against his abdomen.

On admission there was general rigidity, but the spasm was apparently all voluntary, and general tenderness slightly more marked just below the umbilicus; pulse 120; no marked pain. Two hours after entrance a severe crampy pain. Pulse began to rise and pains appeared peritoneal; vomited. Operation, three hours after entrance, by writer.

Median incision below the umbilicus. Abdomen contained thin, cloudy fluid, and occasional fibrin flakes in intestine. On a coil of ileum directly beneath the umbilicus was a ragged tear about three quarters of an inch long, and one and a half inches from it an area where the peritoneum had been stripped off the muscular coat over an area two inches by one inch. This looked as if it might be due to stretching sufficient to burst the outer or peritoneal coat. The rent had everted edges. It was inverted and sutured transversely to the lumen of the bowel, and the peritoneum was sutured also over the denuded area. Linen thead was used. Drainage of pelvis and elevation of head of bed. Left the hospital well in eighteen days.

CASE XIX. July 21, 1905. Service of Dr. Monks. Operated upon by Dr. Hubbard. J. C., thirty-five, entered the hospital July 21, 1905. One hour before entrance, he fell off a team between the wheels, the hind wheels passing over his chest. General condition fair; alcoholic odor to breath; pulse, 84; pupils, equal and react; considerable tenderness over abdomen, most marked in splenic and suprapubic regions; involuntary spasm in this region; no dullness in flanks; splenic and liver dullness not observed. Shortly after entrance he vomited about a quart. Two and a half hours later his pulse was 120. He had nausea and vomiting; pain in bladder region; no dullness in flanks.

Crucial incision was made through the fibres of the rectus. On opening peritoneum a chocolate-colored fluid escaped. The small intestine was examined for its entire length. Toward the end of the search pieces of feces were found in the peritoneal cavity. A rupture was found in the splenic flexure of the colon. Left rectus was practically cut across. It was impossible to suture the rent because of the deep situation of the splenic flexure, which prevented access to it. Gauze packing was therefore carried down to it, and the wound sutured about it. The shock was excessive, and the patient died about six hours after the operation.

MALIGNANT DISEASE OF THE LUNGS AND PLEURA.*

BY HENRY JACKSON, M.D., BOSTON.

SARCOMA and cancer of the lungs and pleura are not of common occurrence, yet cases are not so rare that a careful consideration of cases at our command seems unadvisable. They may be

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classified as primary and secondary. It is the first class that offers the greatest difficulty in diagnosis, as cases have been observed in the hospital that closely simulated acute pleurisy or pneumonia. In one which I report there was no suspicion aroused by the history or the signs on entrance that we had not to deal with a simple acute pleurisy of a severe type.

Further, the secondary cases are often of much interest, in that the pleural and pulmonary infection may occur late after the removal of the primary focus, and without any suggestion of a renewal of the primary malignant disease. The cases under my observation have differed essentially in the main from malignant disease situated elsewhere in the body, in the absence of the cachexia so usually found in malignant disease. The presence of a rapidly-growing mass in the thoracic cavity precludes the long continuance of life, as may be seen in cancer of external parts, and on the other hand does not interfere with the proper nutrition of the body, as in cancer of the gastro-intestinal tract. This is evidently one factor that should be especially emphasized, in that it has led to errors in diagnosis in several cases that are recorded. In the cases where the intrathoracic growth reached proportions sufficient to give rise to symptoms which caused any pulmonary signs, such symptoms were usually of marked severity.

In other features massive intrathoracic malignant growths give rise to confusion, in that fever of a high grade is not unusual and leucocytosis is present, both factors that lead one to consider the presence of an acute inflammatory process rather than a new growth of the pleura or lung. The smaller growths, which are so situated as to give rise to symptoms, often give rise to confusion in diagnosis, in that tubercular trouble is considered as probable, especially as in the cases where the growth is small we do not find the leucocytosis usually associated with the massive primary tumors of the lung and pleura.

Case I. *Primary cancer of the pleura.* — Woman, seventy-one years of age, seen in consultation with Dr. R. C. Hurd of Newburyport, July 24, 1903; mild diabetes for several years; during the past winter she had bronchitis, but recovered entirely. In June she went to Newburyport, feeling quite as well as usual. Towards the end of June she did not feel well, but was not especially sick; later there was pain in her left side. Dr. Hurd saw her on July 5 for the first time and found the left chest flat from apex to base. Five pints of clear fluid were removed by aspiration. From July 5 to July 24 she was tapped four times, and at each operation a large amount of fluid was removed.

On July 24, one day after four pints had been removed, I saw her. She could then breathe fairly easily; temperature normal; pulse 84; no edema of the extremities; color somewhat cyanotic; no pallor; there was much nausea and vomiting. In the left chest there was good resonance to the lower third, with respiration unmodified. The heart was somewhat enlarged to the left; soft systolic murmur at the apex. The urine increased in quantity and the vomiting was much less.

On the morning of Aug. 1 she collapsed and the pulse was 150. At the time of my visit she breathed with much difficulty, being obliged to sit up. Left chest flat from apex to base; no vocal fremitus; no tactile fremitus in left chest. A distant respiratory murmur was heard over the left chest. Five pints of clear fluid with a few red and white cells admixed were withdrawn by siphon. Tapping was required a week later. Her death occurred soon after. Cancer of the pleura, with a few small nodules in the lung, was found. No primary source for the cancer was found. The extremely rapid reaccumulation of the fluid caused Dr. Hurd to suspect malignant disease. I was rather inclined to look upon the heart as the cause of the trouble. The urine, though scanty, gave no reason to suspect structural kidney disease. The aspect of the patient was not such as to cause the slightest suspicion of malignant disease.

Case II. *Primary sarcoma of pleura.* — Man, thirty-two, entered the hospital July 28. (Volume 444, p. 170.) Family history negative. Previous health not important; habits good. Three weeks before he entered the hospital he took "cold" while driving in a storm. He had chills that night. He had not worked since the onset of the trouble. Cough, with whitish expectoration, soon came on, and dyspnea developed gradually. No chills since first day. On entrance there was marked dyspnea; he was well developed and nourished; cyanotic. The right heart border was just to the left of the right nipple. The left chest was completely flat from the clavicle to the base; tactile fremitus and vocal resonance were absent below the second rib. Two quarts of slightly reddish fluid were removed by aspiration.

Aug. 1. Much better; temperature was lower.

Aug. 2. One pint of fluid similar to first was removed.

Aug. 3. Was aspirated in eighth space where the percussion was flat and fremitus was not obtained. Only a few drops of bloody fluid were obtained.

Aug. 9. Pulse and temperature slowly rising. Dyspnea marked. Physical examination practically as at entrance. He was seen in consultation by Drs. Munro and Sears. As aspiration in two places gave no fluid, a rib was excised by Dr. Munro, and the finger came at once upon a large solid tumor. A bit of the growth was excised, and the tumor was diagnosed as a round cell sarcoma. He failed gradually and died Aug. 12. No autopsy.

During the whole illness the temperature was elevated, during the first few days varying from 102° to 104°, and during the rest of the time from 101° to 102°, occasionally reaching 104°. Pulse 110 to 120. Unfortunately there was no blood count recorded. This man was apparently perfectly well until six weeks before death, at which time there developed what appeared to be an acute pleurisy.

A malignant tumor of the pleura was diagnosed when, on Aug. 9, examination of the chest gave evidence, by flatness and total absence of fremitus, of a mass in the pleural cavity. Aspiration showed that this mass was not fluid. This case is a type of the possibility of making the diagnosis of a solid tumor of the pleura by physical examination. After the fluid was removed, the heart, though displaced, was not as far to the right as if there were a large pleural exudate, a factor sometimes of value in the diagnosis of a solid pleural tumor.

Case III. *Primary carcinoma of lungs.* — Woman, forty-four, entered the hospital Aug. 8. (Volume 527, p. 192.) Family history negative. Previous history: no serious sickness. Since April in bed on account of varicose veins of the legs. In June was operated upon for a laceration of the cervix. After leaving the hospital she walked about for a few days, and then went to bed on account of varicose veins,

accompanied by swelling of the legs. For two weeks has felt worse; headache, vomiting, some cough, with bloody expectoration. There was some pain in the left axillary region. Well developed and nourished. Tongue dry, with a brownish coat; pulse, 100; temperature, 102°. Above the right clavicle was a small movable mass. Dullness at left apex, with bronchial respiration and increased fremitus; râles heard all through the left lung; leucocytes, 22,000; no bacilli of tuberculosis.

Aug. 11. Widal reported as positive.

Aug. 22. Doing fairly well; temperature and pulse elevated.

Sept. 3. Weak; temperature high; pulse elevated; cough not especially troublesome.

Sept. 12. Marked dullness upper left lung, with increase of vocal and tactile fremitus.

Sept. 16. Phlebitis, both legs.

Sept. 20. Death.

The temperature and pulse were elevated, but irregular all through the illness.

Autopsy (02.129): Grayish nodules all over the lungs; more frequent over the upper left lobe; occasional large nodules; more lesions on left than on the right. There were similar lesions in liver, spleen and kidney.

In this case again there was no reason to suspect malignant disease, and the pulmonary trouble was looked upon as probably tubercular. The autopsy did not prove the existence of a primary source of infection, so that the case may be considered as one of primary cancer of the lungs. There was no emaciation; no pallor to suggest malignant disease. The finding of the Widal reaction (probably due to some error in technique or observation) made typhoid possible in spite of the leucocytosis.

CASE IV. *Primary carcinoma of lungs.* — Man, sixty-three, entered the hospital June 2. (Volume 586, p. 248.) Family history: Mother and one brother died of consumption. Previous history not important, except alcoholic excess in the past. For three months severe burning pain in right chest, constant; pain has increased of late; no hoarseness; no dyspnea. Emotional; senile; fairly well developed; no pallor; slight dullness in right front to third rib; also a small dull area about fourth rib in front; dullness in right back from apex to angle of scapula. Over the dull area there was a diminished broncho-vesicular respiration; few râles at base.

June 6. Temperature irregularly elevated; delirium; much complaint of pain; leucocytes, 75,000; respiration practically absent in right upper chest. Dullness with absent respiration in lower right axilla.

June 10. No change; gradual failure; death.

Autopsy: Right pleural cavity contains 500 cc. bloody fluid. Right lung contains tumor size of large orange adherent to first, second and third ribs, invading practically whole of the upper lobe. The tumor was cut off from the surrounding lung tissue by a cartilaginous capsule. Central portion of tumor contains cheesy, necrotic material. Similar mass between clavicle and rib, extending into the neck. Inferior lobe shows congestion and edema. Bronchial lymph nodes negative. Small nodule in cortex of right kidney. The character of the tumor was very obscure on macroscopic examination, but a microscopic examination showed it to be carcinoma. It was at first thought it might be actinomycosis.

In this case a diagnosis of malignant growth was made, though the enormously high white count made some inflammatory process seem possible. Aneurism was considered as possible, but the great extent of the tumor and the absence of pulsation, proved by x-ray, made such a diagnosis practically impossible. This case may be considered as a type illustrating the absence of cachexia and emaciation, which I have previously referred to as certainly not rare in malignant disease of the thoracic cavity.

These cases are of especial interest in that the disease was primary in the lung or pleural cavity; in two apparently primary in the lung. In two cases the diagnosis was made prior to death; in one case it was suspected, while in the fourth (No. 3) cancer was not suspected.

In the six following cases the pulmonary disease was secondary to malignant trouble known to have preceded the symptoms on account of which the patients entered the hospital. In these the diagnosis was, of course, less difficult and of much less importance.

CASE I. *Secondary sarcoma of lungs.* — A man, twenty-five, entered the hospital Aug. 3. (Volume 132, p. 170.)

In April he was at the Massachusetts General Hospital for a tumor on both sides of the lower jaw. For two months loss of flesh, soreness across the lower part of the chest and cough. For three weeks he had noticed enlargement of the chest as a whole.

Physical examination: Pallor, emaciation, tumor of jaw. Heart two inches to the right of sternal border. Some dullness right lung, and later a pleural friction rub in right axilla. Marked protrusion of left chest; lower left back and left axilla flat; tactile fremitus and local resonance much diminished; high pitched respiratory murmur heard below the angle of the scapula. Sixteen ounces bloody fluid withdrawn by aspiration. Leucocytes 11,600.

Aug. 5. Sixteen ounces fluid withdrawn.

Aug. 6. Aspiration, no fluid.

Aug. 7. Signs of solidification in left back less marked. Very faint respiratory sound in left front and left axilla.

Aug. 15. A small bit of tissue removed by aspirating needle, which was found to be sarcoma.

Aug. 16. Death.

Autopsy: Thoracic cavity occupied by a large tumor mass which bound together the thoracic viscera. Lungs pushed backward and downward. Left pleural cavity obliterated. In right pleural cavity a liter of bloody fluid and many soft whitish tumors on the pleural surface. Many tumors in both lungs. The main tumor mass evidently arose from the posterior mediastinal lymph glands and measured 22 x 14 x 13 cm. The tumor had pushed the heart forward and to the right. Microscopically the tumor was a round and spindled celled sarcoma.

The confusion that may arise in physical signs is well exemplified and also explained in this case. The left pleural cavity was obliterated ten days after one quart of fluid had been removed by aspiration. Further physical signs were obscured by the tumor masses in the lungs and by compression of the lungs by the massive growth of the main tumor in the post-mediastinal space.

The sarcoma was diagnosed before the diagnosis was confirmed by the bit of tumor obtained by aspiration.

Case II. *Secondary carcinoma of lungs.* — Man, fifty-one, entered the hospital March 10. (Volume 480, p. 94.)

He had pneumonia eight years before entrance. He had formerly used alcohol to excess; had had gonorrhea and "chancre" with secondary signs. He had not been well for eighteen months; since August increasing weakness with loss of seventy-five pounds in weight; jaundice for three months and a half, swelling of legs and abdomen; for ten days dyspnea.

Physical examination: Deep jaundice; pallor; emaciation; dullness at right apex to second rib, and posteriorly over right supra-scapular fossa. Also dullness below angle of the scapula increasing to flatness at the base; dullness below fourth rib in left front. Râles heard over dull areas, especially behind. Tactile fremitus not modified. Liver enlarged and nodular; white cells 5,800. There was no improvement, the dyspnea being a marked feature. Delirium preceded by several days his death on March 24.

Autopsy (00.48). In both lungs numerous small nodules all over the surface and in the right lung extending into the substance of the lung. Primary adeno-carcinoma of the liver; gallstones; jaundice.

In this case it was evident that the visceral pleura was invaded by the cancer before the lung substance. The white count in this case was especially low, a fact not noted in the other cases.

Case III. *Secondary carcinoma of lungs.* — Woman, forty, admitted to hospital Nov. 8. (Volume 370, p. 148.)

She gave a history of a fall five months before entrance; back injured. There had been much pain, and for many weeks she had not been able to walk; loss of twenty pounds in ten weeks; no local signs were demonstrable, and she was for a time on the surgical side as a movable kidney was found.

Dec. 1 she was again placed on the medical side. (Volume 370, p. 211.) At this examination there was found harsh respiration all over the chest with râles at the bases; later hemoptysis; leucocytes 16,800.

She died Jan. 13, after an accident on Dec. 19, in which her leg was broken.

Autopsy: Whitish nodules found in both pleural cavities; numerous nodules in left lung; nodules in diaphragm, stomach, mesenteric lymph nodes, uterus, ovary and bones.

In this case no diagnosis was made, and there were no signs by which a diagnosis could have been made. The hemoptysis occurred late in life when she was very ill, and might well have been due to some patch of lobular pneumonia.

Case IV. *Secondary sarcoma of lungs.* — Man, seventy, entered the hospital April 27. (Volume 110, p. 184.)

Well developed and nourished; loss of weight for six or seven months; for four months he had noticed small black tumors on the skin; dullness from angle of scapula downwards in both backs.

May 1. Diminished bronchial respiration with râles in the right back. Gradual failure without marked pulmonary signs. Death May 7.

Very numerous tumors all over the body, blackish in color. Throughout the lungs large number of tumors, varying in size from pinhead to 1 cm. in diameter. Infarction in lower right lung. Similar tumor masses in liver, kidney, brain, pancreas and testicle.

In this case the pulmonary lesions gave rise to no symptoms and had no apparent effect upon the duration of life.

Case V. *Secondary carcinoma of lung.* — Woman, forty-six, entered hospital Jan. 28. (Volume B. 262, p. 186.)

For nine months a tumor of left breast. The breast was removed Feb. 7.

March 19. Respiration rapid; cough troublesome; severe asthmatic attacks.

April 4. Severe dyspnea; cough. Death. No pulmonary examination is recorded.

Autopsy: Marked pallor; nodule in right breast. Left breast replaced by a large ulcerating area. In the left pleural cavity were several liters of a highly colored fluid. The parietal pericardium and the diaphragmatic pleura were covered with many small tumors. A few nodules in left lung; nodules in liver.

In this case the chief lesions were in the pleural cavity, and death was evidently the result of the cancerous pleurisy with large effusion.

Case VI. *Secondary sarcoma of lung.* — Girl, fourteen, entered hospital Sept. 1. (Volume 491, p. 112.)

Six months before admission the right leg had been amputated at the hip joint for sarcoma. Three weeks before admission she had pain in the left side, dyspnea and much cough. There was much expectoration streaked with blood; great weakness, but not confined to the bed until admission to the hospital. There had been no cough until three weeks before she came to the hospital.

Physical examination: Herpes labialis; slight exophthalmos. Left chest flat from apex to base, front and back; no fremitus; respiration bronchial over the upper front with increased voice sounds. Respiration and vocal fremitus absent below the fourth rib; leucocytes, 19,900. Sixty ounces of bloody fluid were removed by aspiration from the left chest.

Sept. 3. Fair respiration and resonance upper left.

Sept. 13. Breathes easier and is more comfortable.

Sept. 27. Dullness left front; bronchial respiration and bronchial voice sounds with high pitched râles; increased fremitus.

Sept. 29. Much dyspnea. Death.

During the course of the disease the temperature was from 100° to 102°; pulse 130 to 140.

Autopsy (00.169). Some fluid in left pleural cavity; right pleural cavity obliterated; left lung hard, firm and large rounded nodules noticed in places; much blood in the pulmonary substance. The main part of the right lung was occupied by round nodules very full of blood, small blood sinuses separated by bands of yellow tissue.

In this case is exemplified the great rapidity of the growth of secondary sarcoma in organs richly supplied with blood. Death was the direct result of the sarcoma in the lungs. The pleura was not directly invaded.

There are three cases on record in which there was a metastatic growth in the lungs which gave rise to no symptoms and no pulmonary signs were discovered.

Case I. *Primary cancer of the pancreas* with several nodules in the lungs near the pleura.

Case II. *Colloid cancer of the stomach* with metas-

tases on the pleural surface of the right lung and the diaphragmatic pleura.

CASE III. *Cancer of pancreas;* jaundice; metastases in the liver; cancerous peritonitis with thrombosis of both common iliacs and small tumors on the parietal pleural surface of both lungs.

These three cases point towards the common method of invasion of the lung, namely, by the pleural surface.

Two cases seen in private practice are of interest; in both the diagnosis was obscure.

Woman, sixty-three, seen in August, 1904. Twenty-eight years previously she had an attack of pain in the upper abdomen; several years later another attack of pain. Twelve years before several attacks of pain of varying severity. Ten years ago a tumor of the right breast was removed and found to be cancer. In the year 1903–1904 she had lost flesh, had indefinite abdominal pain but no severe attacks of pain; since the spring of 1904 much nausea and vomiting. The question arose whether the symptoms were due to gallstones or growth about the gall bladder of an inflammatory nature, or whether there was a malignant growth. She was not emaciated; she was not suffering acute pain, rather distress and nausea.

The gall bladder was apparently enlarged, and this, according to the law of Courvoisier, suggested malignant trouble. Further, there was a little dullness in the lower part of the right chest. No pulmonary symptoms.

During the early winter she was fairly comfortable. I saw her again late in January. At this time she had lost much flesh; there was a large lobulated mass in the left side of the abdomen; in the region of the gall bladder there was an indefinite mass. In the lower right back there was dullness with diminished respiration without râles; in the right front there was flatness from the third rib to the base without respiration; the heart was not displaced. In spite of the marked signs of involvement of the lung there were no symptoms suggestive of pulmonary disease. In January I think the advice against operation in August was fully justified. She died late in the summer of 1905.

A woman, forty years of age, seen in November. Her mother was said to have had pulmonary tuberculosis in her youth but was at this time well; one brother died of tuberculosis. In the previous year a tumor of the breast was removed and found to be carcinoma. She had a small uterine tumor believed to be fibroid. Since the preceding April she had a hard cough, spasmodic in character; during the preceding summer the cough continued without expectoration.

Physical examination of the chest was negative in the summer. In September an x-ray examination showed a slight shadow in the upper right chest. Some loss of flesh in last six months. Examination of the chest showed slight dullness in the upper right back with diminished respiratory murmur; no râles. She complained of a good deal of pain in the region of the right shoulder.

During the next two months there was a train of symptoms gradually making clear the diagnosis of cerebral tumor, constant headache, vomiting and paresis of single muscles. The pulmonary symptoms were comparatively mild and practically kept in abeyance by the sedatives rendered necessary by the cerebral symptoms. No signs were positive, but the whole course of the disease made the diagnosis of recurrent carcinoma in the lung and brain most probable.

Post-mortem examination showed a large mass involving the posterior mediastinal lymph glands and the bronchial glands. There were numerous small tumors in the lungs and "a little involvement of the pleura which apparently was secondary to that of the lungs." There were also nodules in the kidneys. Liver and other organs free. For many months the possibility of a new growth in the lungs was not suggested.

The above recital of cases shows how latent the existence of malignant intra-thoracic disease may be in certain cases, and also that in other cases the growth may be so rapid as to suggest the possibility of some acute inflammatory disease of the lungs or pleura. I would especially note the absence of cachexia so usual in malignant disease in the cases where the main lesions are situated in the thoracic cavity.

Reports of Societies.

RHODE ISLAND MEDICAL SOCIETY.

THE Ninety-fourth Annual Meeting of the Rhode Island Medical Society was held in Masonic Temple, Providence, on Thursday, June 1. The President, Dr. WILLIAM R. WHITE, presided.

The House of Delegates reported that the following fellows had been elected officers for the ensuing year:

President, Dr. Christopher F. Barker, Newport; First Vice-President, Dr. Charles V. Chapin, Providence; Second Vice-President, Dr. Frank B. Fuller, Pawtucket; Secretary, Dr. Stephen A. Welch, Providence; Treasurer, Dr. George S. Mathews, Providence.

Standing Committees: Of Arrangements, Drs. William B. Cutts, Pearl Williams and Herbert G. Partridge. On Publication, Drs. G. D. Hersey, C. M. Godding and G. T. Swarts. On the Library, Drs. H. G. Miller, G. D. Hersey, G. W. Porter, G. L. Collins and F. L. Day; Curator, Dr. William J. McCaw. On Necrology, Drs. H. C. Putnam, E. B. Harvey and L. F. C. Garvin. On Legislation, Drs. G. T. Swarts, W. F. Gleason, W. L. Munro, the President and Secretary, *ex-officio*. On Building, Drs. H. G. Miller, J. W. Mitchell, R. F. Noyes, F. H. Peckham and F. T. Rogers. Auditor for two years, Dr. E. B. Harvey. Delegate to the House of Delegates of the A. M. A. for the years 1906 and 1907, Dr. John Champlin.

The annual report of the secretary, Dr. S. A. Welch, showed that the total membership was 328, of whom 299 were resident fellows, 20 were non-resident and 9 were honorary. During the last year and three months, 35 physicians have joined the Society. The following have died, two ex-presidents, Drs. Elisha P. Clarke and George F. Keene; two fellows, Drs. Charles D. Wiggin and Edgar W. Remington, and two honorary members, Drs. Samuel Abbott and Prof. Alpheus S. Packard.

Two fellows have become non-residents, namely, Drs. George M. Crowell and John H. Cheever.

Reports were received from Drs. Fuller, Barry and Briggs as Councilors, and from Dr. Swarts as chairman of the Committee on Legislation, and from Dr. H. G. Miller as Chairman of the Committee on the Library and on Building.

The bound volumes added to the library numbered 967. The total number of bound volumes now in the library approaches 20,000.

Dr. G. D. HERSEY said that Dr. H. G. Miller has given to the Society his entire ophthalmological and otological library. This collection includes many of the most valuable treatises and monographs relating to the eye that have appeared during the past thirty years in French and German as well as in English.

A feature of much interest is a shelf of early English books on the eye, books issued before 1850. These are of historical importance, showing the development of English and American ophthalmology. The most notable part of Dr. Miller's library is doubtless the files of special periodicals representing the most important journals that have been published in this department during the past thirty years in Great Britain, France, Germany and Italy as well as in our own country.

The following members of the faculty of Brown University were elected honorary members: Rev. William Herbert Perry Faunce, D.D., LL.D., Albert Davis Mead, Ph.D., Frederick Poole Gorham, Ph.D.

The following physicians were announced as having joined the Society since the March meeting: Dr. Michael J. O'Neil, Providence; Dr. John L. May, Westerly; Dr. Michael H. Scanlon, Westerly; Dr. Edwin R. Lewis, Westerly.

It was voted that the next meeting be held in Newport.

DR. HALSEY DEWOLF presented the report of the Trustees of the Fiske Fund.

The prize of $250 for the best essay on the "Sequelæ of Gonorrhea in Both Sexes" has been awarded to the essay bearing the title, "The Way of the Transgressor is Hard," which was found to have been written by Dr. W. Louis Chapman of Providence, R. I.

For the year 1905–1906, a prize of $250 is offered for the best essay on the subject, "The Etiology and Diagnosis of Epidemic Cerebrospinal Meningitis," and for the year 1906–7, a prize of $250 for the best essay on the subject of "Diet in Typhoid Fever."

A portrait of Dr. Lewis Leprelete Miller, who was president of the Society in 1846–47 and the most distinguished surgeon of his time in Providence, was presented to the Society by Mr. Edward Carrington through Dr. G. L. Collins. Dr. Collins said that the portrait was made when Dr. Miller was an old man.

A medical diploma of Brown University dated 1826 was also presented to the library by Mr. Edward Walker of Wakefield, R. I. Dr. R. F. Noyes spoke of Dr. John Rose of South Kingston to whom the diploma was issued.

Delegates from other societies were presented as follows:

From the New Hampshire Medical Society, Dr. J. Elizabeth Hoyt of Concord; from the Connecticut Medical Society, Dr. M. M. Johnson of Hartford and Dr. William H. Judson of Danielson; from the Massachusetts Medical Society, Dr. L. M. Palmer of Framingham, Mass.

DR. WILLIAM R. WHITE spoke feelingly of the late Dr. George F. Keene, his predecessor as president of the Society.

DR. WILLIAM E. WILSON of Pawtucket read a paper entitled,

TREATMENT OF INOPERABLE MALIGNANT GROWTHS WITH COLEY'S TOXINES

and reported two cases.

PRESIDENT W. H. P. FAUNCE, D.D., of Brown University delivered the annual address on

THE MEDICAL PROFESSION IN MODERN LIFE.

At the annual dinner which followed DR. EDWARD E. PIERCE of Providence was anniversary chairman. The after-dinner speakers were Rev. W. H. P. Faunce, D.D., LL.D., John C. Pegram, Esq., and Hon. Charles P. Bennett, Secretary of State.

AMERICAN LARYNGOLOGICAL ASSOCIATION.

TWENTY-SEVENTH ANNUAL CONGRESS, HELD AT ATLANTIC CITY, N. J., JUNE 1, 2 AND 3, 1905.

(Concluded from No. 21, p. 590.)

SECOND DAY, FRIDAY, JUNE 2.

DEFLECTION OF THE NASAL SEPTUM IN CHILDREN.

DR. ARTHUR A. BLISS of Philadelphia read this paper, and in opening classed this condition as one of the less frequent causes of mouth breathing; but stated that when it did exist, it caused as complete a nasal stenosis and mouth breathing as hypertrophied adenoids; and that when associated with adenoids, as it so frequently was, the removal of the adenoids alone would not relieve the conditions.

After reviewing the usual symptoms and the many theories of causation he said that to his mind the "common-sense view" of most cases of septal deformity was that the condition was caused by "congenital deformity and traumatism," the latter being the much more frequent and important cause. He then described the various forms of deflection and spurs, and spoke of the concurrent swelling of the inferior turbinated bones (usually more on the side not occluded by the deflected septum), due to disturbance of vaso-motor balance.

The writer thought that the best time to correct septal deflection, was in childhood, as soon as they were detected; especially in acute cases with swelling and fracture caused by traumatism. In this last class of cases he particularly condemned the usual advice to "wait till the swelling goes down"; and also the usual general surgical dressing for the fractured nose, which, applied as it is, across the face and pressing on the nose, cannot possibly relieve the deflection of the septum, but rather tends to increase and to fix it.

He strongly advised the replacing of the septum immediately after the injury, by the finger, or dressing forceps, under general anesthesia if necessary; and the use of an intra-nasal splint of *soft* rubber tubing, 2 to 2½ inches long, large enough to fit firmly into the nostril, and cut off *obliquely* at both ends, with the *long* point *up* on the anterior and the long point *down* on the posterior end; with occasionally a bit of gauze packing in the tubes to give a little firmer support.

A similar tube but a trifle smaller should be put into the other nostril.

In résumé, the author said that he felt that traumatism was the most frequent cause of septal deflection in children; that when this is the case, the deformity should be corrected at once; that in long-standing cases of unknown origin, it was not necessary to wait for the complete development of the nose, before operating, but we should operate at once.

A SECOND NOTE ON A CASE OF SARCOMA OF THE NOSE.

DR. J. PRICE-BROWN of Toronto referred briefly to three cases of sarcoma, which he had already reported to the Association in 1903, and made further report to

the effect that one case operated upon ten years ago was still in perfect health with no recurrence; a second case operated upon two years and nine months ago was in perfect health, with no recurrence; a third case was operated upon a little over a year ago, and recurred in about two months, and had recurred and been operated upon several times during the past year. He expected still further recurrence, but as the patient's general health and weight were excellent, he felt that the prognosis was good.

In closing he made a strong plea for the use of the electro-cautery in treatment of sarcoma of the nose.

A FURTHER STUDY OF HAY FEVER, CLINICALLY, WITH THE USE OF POLLANTIN.

DR. ALEXANDER W. MACCOY of Philadelphia: The writer referred to his previous paper reporting most favorable results from the use of Dunbar's serum in the fall of 1903; and again in the spring of 1904, for cases of vernal conjunctivitis.

The results were so favorable that he obtained a supply of newly imported serum for use in the late summer and fall of 1904. With this serum the early cases did well, but the late, autumnal cases were not at all satisfactory, only a few being slightly relieved, most not affected at all, and some made distinctly worse. About that time the writer had a personal interview with Dr. Dunbar, who told him that the 1904 lot of serum was not at all the same as the 1903 serum. Dr. Dunbar had been told by "some American physicians," that only the pollantin made from grass seeds was needed for the American market, and he had accordingly made it up from grass seeds only, and had made it twice the strength of the 1903 lot, the latter fact making it decidedly irritating if not diluted. The writer of the paper was ignorant of both these facts, but upon learning them he went back to a small quantity which he still had of the 1903 lot, and obtained from it the same brilliant results as before.

Judging from the use of the two lots of serum, the author felt confident that, with properly selected serum, or sera, the control of practically all cases of hay fever was an assured fact.

TONSILLOTOMY, THE BASIS FOR THE TREATMENT OF TONSILLAR AFFECTIONS.

DR. GEORGE B. HOPE of New York: He referred to Sir Felix Lemon's statement of the "dangers of direct and remote septic influences, latent in morbid conditions of the facial tonsil"; and also to Dr. Bosworth's view that "there are practically no tonsils in a healthy throat"; and indorsed the belief that no lymph body once inflamed ever resolved to a normal healthy condition. He deprecated the frequent statement that "time would bring about atrophy," that "the tonsils would cease to give trouble after puberty," and similar misleading remarks; and strongly advocated tonsillotomy as the only rational and radical treatment for a tonsil once inflamed.

As to the one bugbear, hemorrhage, he said it was so rare as to be ignored in deciding upon operation, except, of course, in hemophilia; although all precautions should be taken and cases carefully watched.

GANGRENE OF THE TONSIL, WITH REPORT OF CASES.

DR. CHARLES W. RICHARDSON of Washington, D. C.: The author spoke of the very meager literature on the subject, he being able to find only three cases reported, two his own, and one other.

The cases were all fatal; no opinion could be formed as to the source or character of the infection.

The bacteriology was unsatisfactory — a diplococcus was found resembling the diplococcus lanciolatus; streptococci were abundant; but there were no bacilli such as Vincent's, nor the tubercle, nor diphtheriæ, and no spirillæ; thus the bacteriological findings were valuable only in a negative way.

SEQUEL TO A CASE OF EPITHELIOMA OF THE LARYNX, SHOWN TO THE ASSOCIATION TWO YEARS AGO, 1903.

DR. WALTER F. CHAPPELL of New York reported the case, and referred to his previous notes in 1903. The man had been operated upon in October, 1903, by thyrotomy and the left vocal cord removed. He remained in good condition until October, 1904, when the growth recurred in the anterior commissure.

Tracheotomy was done on Nov. 20, and total laryngectomy on Nov. 27, 1904, by Dr. Wm. T. Bull of New York. At present, June 1, 1905, the patient wears a short tube in the tracheal opening; can eat as well as ever; can articulate distinctly and speak so as to be heard "six feet away;" has gained in weight and says himself that he "never enjoyed better health than he does now."

TWO CASES OF IMPACTED FOREIGN BODY IN THE ESOPHAGUS.

DR. GORDON KING of New Orleans reported these cases, on account of the great difficulty of extraction due to the very firm impaction in both, and on account of the grave complications arising in one of them.

One was a "patent, brass, bachelor's button," one disk of which was very firmly impacted into the anterior wall of the esophagus, just below the level of the cricoid cartilage. This was finally extracted from above by forceps, but with considerable tearing of the esophageal wall and some hemorrhage.

The other was a large, irregular, jagged piece of bone, impacted about ten inches from the teeth, just at the lower level of thyroid gland.

After failure to extract from above with Killian's tube and forceps, an esophagotomy was done in the usual way on left side.

This was followed by breaking down of the esophageal wall, suppuration of the wound in the neck, and empyema of the thorax, necessitating resection of a portion of a rib.

At present the esophageal wound is practically healed, but the patient is still under treatment for the empyema.

The writer condemned the blind and groping use of the usual "coin catchers," "horse-hair probangs," and similar instruments; and advocated the location of the foreign body in these cases by the x-ray, and then extraction by the Killian tube and forceps, or if that failed, by open operation.

THIRD DAY, SATURDAY, JUNE 3.

PAPILLOMA OF THE LARYNX IN CHILDREN.

This paper was read by DR. J. PAYSON CLARK of Boston, who first spoke of the fact that the cause of the condition is still unknown; he also spoke of its rarity, only 12 cases being noted in 12,623 children in the Throat Department in the Massachusetts General Hospital from 1889 to 1904.

Omitting any discussion of the symptoms, the author proceeded at once to the treatment, and "laid down the fundamental proposition, that these growths will not yield to any form of treatment, which has been attempted, however radical, until the period of active growth (of the patient) has passed."

"Rapid recurrence occurs only in childhood when cell activity is at its height."

The author said that it was not possible to define the extent or significance of this "period," but that clinical experience establishes its existence.

The author then went into extensive detail of many different opinions, and many tables of groups of cases treated by different methods, mostly by radical operation; gave extensive histories of 14 cases of his own; and after a very careful analysis of methods and results he concluded with a brief but emphatic summary as follows:

Papilloma of the larynx in children is a very serious condition, the cause of which is unknown.

The best treatment in all cases is tracheotomy, and non-interference with the growth itself.

If under this treatment it still persists after an age when the child can be treated as an adult, it has probably lost its activity of reproduction, and attempts at its removal may be made.

REST IN THE TREATMENT OF LARYNGEAL AND PULMONARY TUBERCULOSIS.

Dr. W. Peyre Porcher of Charleston read this paper. He first alluded to the well known general principle of treatment of diseased parts, by rest, both physical and functional; and applied the same principle to the diseased larynx, and thereby, indirectly, to the lungs. By "rest" of the larynx he said he meant *total and absolute cessation of phonation*, the cough being limited as much as possible by local and systemic treatment; and said that this rest did not result in any ankylosis, as sometimes claimed, of the laryngeal joints, as there was sufficient movement of the larynx during respiration and swallowing to prevent that.

He objected to the plan advocated by some of attaining this absolute rest by tracheotomy, stating that the irritation of the tube and the discharge from the wound more than counterbalanced the rest attempted in that way. He felt that failure to observe laryngeal and bodily rest (to the greatest degree possible) in tuberculosis was criminal.

THE RELATION BETWEEN LARYNGEAL AND PULMONARY TUBERCULOSIS.

Walter F. Chappell of New York read this paper, and after reviewing the various different relations of the two conditions he discussed principally their mutual etiological relation and said that while convinced that in most cases the larynx was infected late in the course of the pulmonary disease, by auto inoculation, he felt equally certain that in a goodly minority of cases the laryngeal infection was wholly independent of the pulmonary lesion, and had its own etiology, pathology, prognosis and treatment.

After a complete discussion of the prevalent views of the means of infection, the point of entrance and manner of development of the infection, in these two localities, and also of other places in the body where the tubercular infection is localized, and speaking of the relation of the general health, *i. e.*, powers of resistance to the development of the tubercle bacilli, he claimed that there was no case of tubercular larynx, however late its development, that *might* not be considered as having an independent origin; this claim resting largely upon the remarkable *immunity* of so many larynges, where pulmonary involvement already existed.

ROGERS' MODIFICATION OF THE O'DWYER TREATMENT OF CHRONIC STENOSIS OF THE LARYNX.

Dr. D. Bryson Delevan of New York read this paper. After a very pleasant tribute to Dr. O'Dwyer, and to Dr. Rogers for his extension of Dr. O'Dwyer's work, the author referred to Dr. Rogers' classification of the causes of chronic obstruction of the larynx under the following heads:

I. Cicatrices of traumatic, operative or inflammatory origin.

II. Granulations forming around a canula or intubation tube, which are much less common than usually believed.

III. Hypertrophic, sub-glottic laryngitis usually in retained-tube cases.

IV. Prolonged and repeated diphtheritic inflammation, rare in these days of antitoxin.

V. Post-diphtheritic paralysis of the abductor muscles of larynx, rare but clinically not to be distinguished from.

VI. Atrophy of abductor muscles of larynx from disuse in retained-tube and tracheotomy cases.

VII. Obturation or compression of larynx by neoplasms.

The author then described and showed various types of tubes in use, and explained the terms applied to them:

I. The normal tube, a regular O'Dwyer tube.

II. The special tube, larger at lower end and at the so-called "retaining-swell."

III. The plugged tube, one in which a hole is bored in the side of the tube opposite a tracheal fistula; and into this hole, another tube or "plug" is inserted through the tracheal fistula at right angles to its long axis of main tube, thus absolutely preventing the coughing up of the tube, and also keeping the tracheal fistula open. The "clamped" tube was practically the same as the "plugged" tube in function, a clamp being used instead of a side tube or plug through the tracheal fistula.

He then gave an outline of differential diagnosis and symptoms and then discussed at length the treatment.

He concluded in general that, while some cases demanded plastic operation, and some were benefited by intermittent dilatation by Schroetter's tubes, in a vast majority of cases the only hope of a successful and permanent result was from prolonged dilatation with O'Dwyer's tubes or some modification thereof to suit each individual case.

PAPILLOMA OF THE NASO-PHARYNX SIMULATING EPITHELIOMA AND FIBROMA OF THE LARYNX, IN A CHILD, NECESSITATING TRACHEOTOMY; AND SUBSEQUENT LARYNGO-FISSURE FOR REMOVAL FOLLOWED BY PROLONGED INTUBATION.

These two cases were reported by Dr. Thomas J. Harris of New York.

(*a*) The first was a large growth filling the naso-pharynx, attached to the posterior wall, and non-pedunculated, non-painful and only slightly vascular.

The microscopical reports, two in number, differed, one classing it as epithelioma, the other as benign papilloma; the latter agreeing with the post-operative clinical history, viz.: non-recurrence.

(*b*) The second case was that of a large fibroma of larynx, attached to anterior part of the thyroid cartilage, which was removed after tracheotomy, by open operation, laryngo-fissure and the wound closed.

Later the wound became infected and a stricture of the larynx developed, which was treated by a "special, plugged tube" (O'Dwyer-Rogers) which the child still wears.

The patient is in good general condition and the prognosis for final cure is good.

LARYNGEAL DIPHTHERIA IN AN ADULT, COMPLICATING CEREBROSPINAL MENINGITIS.

Dr. William K. Simpson of New York, who read this paper, stated that his chief object in reporting this case was to show the possibility of the co-existence of

the two diseases, and that their respective bacilli were not antagonistic to each other.

He called attention to the fact that during the present epidemic of cerebrospinal meningitis, in and around New York, the notion had gained some general credence, that the two diseases could not exist together, and therefore the anti-diphtheritic serum had been extensively used in the treatment of the meningitis, but without good results.

He then gave a detailed report of a case of typical cerebrospinal meningitis, in the course of which a laryngeal diphtheria developed, the clinical diagnosis confirmed by culture of the Krebs-Loeffler bacillus.

Intubation was necessary, and large doses of diphtheria antitoxin were given.

The diphtheria cleared up, but the patient died, the meningitis apparently not being affected in the least by the serum.

AN UNUSUAL CASE OF EDEMA OF THE GLOTTIS.

DR. EMIL MAYER of New York reported this case, which occurred in a male, fifty-one years of age, with a negative history both family and personal, excepting for typhoid fever at ten years of age, and a slight chronic cough for some twenty-eight years.

He was admitted to the hospital with marked dyspnea and cyanosis.

Examination showed a large, tense, glistening mass on right side, at base of tongue nearly occluding the glottis.

On incision a quantity of thick blood and foul-smelling fluid was evacuated, and the dyspnea was relieved.

Staphylococci and streptococci were found in abundance; but no other distinctive bacteria. Later a large solid mass developed where the abscess had been; and about one half of the epiglottis was found to have been destroyed.

The author thought it was a case of acute infection with edema of the glottis, engrafted upon an hereditary syphilis, which latter had produced no marked symptoms in the throat excepting, perhaps, the slight cough of twenty-eight years' standing.

At the executive session of the Association the following-named gentlemen were elected to be active fellows: Dr. Lewis A. Coffin, New York; Dr. Charles P. Grayson, Philadelphia; Dr. George B. Wood, Philadelphia; Dr. George L. Richards, Fall River; Dr. Thomas H. Halsted, Syracuse; Dr. Otto T. Freer, Chicago.

OFFICERS.

The following officers were elected for the ensuing year: President, Dr. J. W. Gleitsman, New York; First Vice-President, Dr. J. L. Goodale, Boston; Second Vice-President, Dr. C. W. Richardson, Washington; Secretary and Treasurer, Dr. J. E. Newcomb, 118 West 69th Street, New York; Librarian, Dr. J. H. Bryan, Washington; Member of Council, Dr. C. C. Rice, New York.

COMPLETE ADHESION OF THE VOCAL BANDS, WITH LARYNGEAL STENOSIS FOLLOWING DIPHTHERIA.

DR. D. BRADEN KYLE reported the case of a child of six years who had had diphtheria nine months previously. Intubation tubes were not retained and a tracheotomy was done. There was at this time considerable ulceration of the vocal bands and of the structures within the laryngeal vestibule, and it was surmised that the ulcerative process extended down the trachea. When the case came under the author's observation a tracheotomy tube was worn and had been continuously for the nine months. The edges of the wound had healed and scar tissue was present. The epiglottis moved freely but the caliber of the larynx was entirely occluded. Under general anesthesia, the tracheotomy wound was enlarged and a curved hemostatic forceps worked up through the tissues until it was felt by the finger directly under what should have been the vocal bands. The structure was then cut through and a dilator introduced. A long intubation tube was inserted with some difficulty. It was long enough to allow the distal end to pass below the tracheotomy wound which was closed by means of plaster strips. The child breathed perfectly well through the new tube for a few minutes but then the respirations began to grow shallow and the general condition alarming. Immediate re-opening of the tracheotomy wound did not relieve it and the intubation tube was then taken out and the urgent danger was passed. Dr. Kyle concluded that from the pressure of the intubation tube on either the recurrent nerve or the internal branch of the superior laryngeal, inhibition of respiration had resulted. He therefore abandoned the proposed attempt at intubation and suggested to the parents that after recovery from what had been done the child should be again anesthetized, the larynx split and the inflammatory tissue dissected out. The child made a quick recovery from the operation described and was able for some days to produce a little sound and to pronounce a few words distinctly but speech was largely limited to lip enunciation. Unfortunately before the second operation could be arranged for, the patient died suddenly from bronchopneumonia, having been in the meantime fairly well. Dr. Kyle was able to secure a post-mortem and exhibited the larynx. Usually in such cases the new tissue is purely of the connective tissue type and passes through the natural changes of such tissue. In this instance, however, the hyperplasia was largely made up of cartilaginous cells. Had the larynx been split and the tissue dissected out the question would have arisen as to what the outcome of operation would have been, for the denuded surface would have been cartilaginous and a secondary stenosis would have resulted. Such a surface would have made it impossible from a histological point of view to insert skin grafts.

Recent Literature.

The Principles and Practice of Medicine. Designed for the use of practitioners and students of medicine. By WILLIAM OSLER, M.D., etc., etc. Sixth edition, thoroughly revised from new plates. New York and London: D. Appleton & Co. 1905.

We have become accustomed to expect a new edition of this popular Practice of Medicine each year. The present volume is on a larger page and from new type, the amount of reading matter has been increased without increasing the bulk. Many sections have been rewritten and many alterations made. The general character of the work remains the same. The giver of drugs, the polypharmacist and the meddlesome practitioner will find but little comfort and encouragement in the portions devoted to treatment. It will, however, do him no harm to consider such paragraphs as this one under the head of treatment of pneumonia: "There is no specific treatment for pneumonia. The young practitioner should bear in mind that patients are more often

damaged than helped by the promiscuous drugging which is still only too prevalent." On the other hand, we should hardly call the author a therapeutic nihilist; therapeutics include other things beside drugs.

The binding of the book has some peculiarly practical features. An undiminished favor may be predicted for this excellent work.

The Worth of Words. By Dr. Ralcy Husted Bell. With an Introduction by Dr. William Colby Cooper. Third edition, revised and enlarged. New York: Hinds & Noble.

Dr. Bell has written a book which should be of value. His attempt is to correct many common errors in the use of English. This he has done by brief paragraphs comparing words which are commonly misused with those which should be substituted. The idea is a good one and he has carried it out with care and attention. This is its third edition, and we have no hesitation in saying that those who read it with care should forthwith rectify many of the common errors of English speech. We trust it may accomplish the purpose for which it was written, but we confess to a certain feeling of annoyance that the author descends to the very position which he is trying to correct in others. It seems somewhat unnecessary, for example, in criticising certain of his reviewers to speak of them as "gentlemanly jaybirds" and "intellectual scabs." Such expressions of pique do not conduce to our respect for his authority.

Dietetics for Nurses. By Julius Friedenwald, M.D., Clinical Professor of the Diseases of the Stomach in the College of Physicians and Surgeons, Baltimore; and John Ruhräh, M.D., Clinical Professor of Diseases of Children in the College of Physicians and Surgeons, Baltimore. Philadelphia and London: W. B. Saunders & Co. 1905.

The authors have prepared this small book in order to give the essentials of dietetics for the benefit of nurses. The importance of the subject will not be questioned, nor will the desirability that an authoritative statement of the facts of dietetics should be in the hands of nurses, be gainsaid. The authors have done their work well and briefly. Should further detail be demanded in any subject discussed, the reader is referred to their larger work, "Diet in Health and Disease." The volume is most adequately indexed.

Vital Questions. By Henry Dwight Chapin, M.D. New York: Thomas Y. Crowell & Co. 1905.

Dr. Chapin, under the peculiarly happy title, "Vital Questions," brings together a series of essays, many of which have appeared in modified form in periodical literature, under the covers of a single volume. Some of the questions he discusses are Inequality, Poverty, the Child, Health, Success, Happiness, Religion and Death. He maintains, and with reason, that the physician has a peculiar opportunity to investigate the fundamental problems of life which lead far beyond his strictly professional work. In pursuance of this idea he discusses briefly but most convincingly the topics to which we have alluded. It is a misfortune that more physicians who have the capacity for this type of writing should not express their experiences and convictions in permanent form. It would be well if the much-talked-of busy life of the physician were varied by such excursions into the field of literature and a certain tendency, we think, in this direction is becoming apparent. We have no doubt that Dr. Chapin's book will be widely read by laity and physician alike.

Cleft Palate and Hare Lip. By W. Arbuthnot Lane, M.S., F.R.C.S., Surgeon to Guy's Hospital, and Senior Surgeon to the Hospital for Sick Children. London: The Medical Publishing Company. 1905.

This is a monograph of sixty-three pages written for the purpose of presenting a résumé of various papers on the operative procedure which the author devised many years ago, and has employed in several hundred cases of cleft palate. More than half of the space is devoted to discursive remarks on faulty development of the jaws and the influence upon them of a defective naso-pharynx. The author advises operation upon cleft palate as soon as possible after birth, and describes his methods of operating in different cases. Where the width of the cleft is not too great a flap is taken from one side, including the muco-periosteum of the alveolus if necessary, turned completely over along the free edge of the cleft and fixed beneath the muco-periosteum lining the roof of the mouth on the opposite side.

To any surgeon who may be called upon to decide the vexed question of cleft palate operation and who is not familiar with the author's views and methods, this pamphlet offers a convenient form for reference.

A Compend of the Practice of Medicine. By Daniel E. Hughes, M.D., late Chief Resident Physician, Philadelphia Hospital; late Physician-in-Chief, Insane Department, Philadelphia Hospital; formerly Demonstrator of Clinical Medicine in the Jefferson Medical College of Philadelphia, etc. Seventh revised edition. Edited, revised and in parts rewritten by Samuel Horton Brown, M.D., Assistant Dermatologist, Philadelphia Hospital; Assistant Dermatologist, University Hospital Dispensary, etc. Including a Section on Mental Diseases and a very complete section on Skin Diseases. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1904.

The seventh edition of this well-known volume on the Practice of Medicine has not been changed in external appearance, although many alterations have been made in the subject matter. The more important of these are articles on fevers, the blood, the sputum, stomach contents, urinalysis and physical diagnosis. The section on mental diseases adheres to the old and now generally

discarded classification, which is unfortunate. It would be better to omit this portion entirely than not to impress upon the student that progress is being made in this important branch of medicine. The size of the book has been increased 137 pages, and a number of illustrations have been added.

A Textbook on the Practice of Medicine. For Students and Practitioners. By JAMES MAGOFFIN FRENCH, A.M., M.D., formerly Lecturer on the Theory and Practice of Medicine, Medical College of Ohio. Second revised edition. Illustrated. New York: William Wood & Co. 1905.

A second edition of this book on the Practice of Medicine differs in no essential respect from the first. We have nothing to add to our review of the first edition, which found in the work much to commend. Certain changes and additions have been made to keep pace with recent investigations. This, however, has not increased the size of the book.

A System of Physiologic Therapeutics, a Practical Exposition of the Methods, other than Drug-giving, Useful for the Prevention of Disease and in the Treatment of the Sick. Edited by SOLOMON SOLIS COHEN, A.M., M.D., Professor of Clinical Medicine in Jefferson Medical College; Physician to the Jefferson College Hospital, and to the Philadelphia General, Jewish and Rush Hospitals, etc. Volume XI. *Serum Therapy.* By JOSEPH MCFARLAND, M.D., Professor of Pathology and Bacteriology in the Medico-Chirurgical College of Philadelphia. *Organotherapy.* By OLIVER T. OSBORNE, M.A., M.D., Professor of Materia Medica and Therapeutics at Yale University. *Radium, Thorium and Radioactivity.* By SAMUEL G. TRACY, B.Sc., M.D., Radiologist, New York Skin and Cancer Hospital; Assistant Neurologist, Vanderbilt Clinic, Columbia University, New York City. *Counterirritation, External Applications, Bloodletting.* By FREDERICK A. PACKARD, M.D., late Physician to the Pennsylvania Hospital. *An Outline of the Principles of Therapeutics with Especial Reference to Physiologic Therapeutics.* By the EDITOR, with Addendum on X-Ray Therapy and an Index-Digest of the Complete System of Eleven Volumes. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1905.

With this eleventh volume of Cohen's System of Physiologic Therapeutics the work has been completed. This volume deals with Serum-Therapy, Organotherapy, Radium, Thorium and Radioactivity, Counterirritation, External Applications, Bloodletting, an Outline of the Principles of Therapeutics with Especial Reference to Physiologic Therapeutics and an Addendum on X-Ray Therapy. Drs. Joseph McFarland, O. T. Osborne, S. G. Tracy, F. A. Packard and the editor, Dr. Cohen, have contributed to this volume. Like its predecessors, it is conservative in its treatment of the many mooted points discussed, but generous in its treatment of many therapeutic methods which are in the stage of experiment and trial. A most valuable therapeutic index-digest concludes the volume with the ordinary index. This digest should be of very great value for quick reference, suggesting, as it does, in the briefest possible space, many important therapeutic facts. We have seen no reason whatever to change our first expressed opinion that this series of books on what is coming to be one of the most important aspects of therapeutics would be acceptable to the profession and would fill a very definite need. This we repeat at the close of the series. The painstaking work of the editor, the difficulty of collating so large an amount of material, and the promptness with which the successive volumes have appeared, all call for sincere commendation. The system will undoubtedly take its place as one of the most significant contributions to medical literature published in this country for many years.

The Open-Air Treatment of Pulmonary Tuberculosis. By F. W. Burton-Fanning, M.D. Cantab. Illustrated. London, Paris, New York and Melbourne: Cassell & Co., Ltd. Chicago: W. T. Keener & Co. 1905.

In a compass of one hundred and seventy-two pages of text Dr. Burton-Fanning discusses the open-air treatment of pulmonary tuberculosis. His aim is to describe the simplest methods of treatment which are efficacious rather than the more complex; to insist upon the predominant value of fresh air in the treatment, and to urge that money be expended toward helping the consumptive after his discharge from the sanatorium rather than in building elaborate structures for his treatment. The book discusses the essential points evidently in a most practical fashion. Much that it contains is not new, but it serves again to emphasize the importance of the disease and the simple, rational methods of its treatment. Too much repetition of these points is not possible. The book is of small size, bound in flexible covers, well printed and sufficiently illustrated.

Saunders' Pocket Medical Formulary. By WILLIAM M. POWELL, M.D. Seventh edition, thoroughly revised and enlarged. Philadelphia and London: W. B. Saunders & Co. 1905.

This little book is familiar and useful as indicating therapeutic measures which have stood the test of experience. Naturally, revision for each new edition is necessary in view of our changing attitude toward drugs and their uses. Many of the prescriptions given, we imagine, are rarely used. The modern method is so far toward simplicity that the prescription containing many ingredients is finding smaller and smaller place in our therapeutics. This small formulary, however, has established its right to recognition and contains in addition to prescriptions many useful facts and suggestions. It is attractively bound in flexible leather and does much credit in this respect and in its printing to the publishers.

THE BOSTON

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REPORT OF THE SURGEON-GENERAL OF THE UNITED STATES NAVY.

The annual report of the Surgeon-General of the navy gives one a very definite idea of the needs of this branch of the public service and of its accomplishment during the past year. The natural growth of the service has necessitated estimates considerably in excess of those for the preceding year. The naval hospitals at various important stations have become inadequate to accommodate the sick, and the desirability of preparing for the possibility of war, with the necessity of modernizing and renovating the hospital buildings, demands a considerable expenditure. The value of the x-ray, both for diagnostic and therapeutic uses, has led to the request that the old machines installed in 1898 be replaced by more effective apparatus of later model. This fact alone is suggestive as indicating the extreme difficulty of keeping abreast with medical advance.

At the beginning of the calendar year the medical corps had 36 vacancies; at the close of the year under consideration there remained 38 vacancies to be filled, owing to changes in the *personnel* of the corps. There has been the usual difficulty, to which allusion has been made year after year, in obtaining satisfactory men for these appointments, in spite of the fact that every legitimate means has been taken to encourage applicants. The standard is no doubt high, but it is a commentary on the state of affairs that of those examined 13 were physically and 20 professionally unfit, and but 17 were judged suitable for appointment to the position of assistant surgeon. Men applying for these positions are expected to have had four years of medical study and about a year of hospital service or practice, hence the very natural difficulty of securing suitable men to apply, in view of the inducements now offered. The report again, as it often has done before, recommends that an increase in certain grades be allowed, to the end that the positions may prove tempting to the best qualified men. Promotion with reasonable assurance is a prerequisite, and this might be obtained by certain relatively slight changes in the regulations.

During the year the facilities of the naval medical school have been extended by providing a summer session following the regular winter term. This second term, or summer course, was attended by thirteen officers and extended from April 29 to June 24. The work undertaken consisted of laboratory exercises in bacteriology, chemistry and hygiene and in various other matters of interest to the physician in general, and to the military physician in particular. A course of clinical lectures was also given upon various types of insanity.

The matter of the enlargement and improvement of certain hospitals has been discussed in three preceding reports, and is again reverted to in this. In general, the naval hospitals are poorly arranged, defective in design and construction, obsolete in type and inadequate to meet the demands of modern medicine and surgery. Most of the naval hospitals were designed at a period preceding the great advances in medical and surgical practice and since improvements in many cases have not been made the old buildings do not compare favorably with the better civil hospitals and, as the report puts it, "are relatively as inferior to them as were the vessels of the navy in 1885 compared with the best type of vessel of to-day." Furthermore, these hospitals were built for the needs of a small navy, but since the number of men in this branch of the service increased from 15,000 in 1885 to approximately 43,000 in 1895, it is evident that very extensive additions should be made if the hospital establishments are to keep pace with the progress in other departments. It is urged, and we think with reason, in view of past experiences, that this work of enlarging and modernizing the hospitals should not be deferred until the navy has reached its maximum strength. A comprehen sive scheme of development is needed rather than merely improvising to meet important needs. The Surgeon-General, therefore, recommends that the attention of Congress be invited to the desirability of taking action to meet the needs of each

hospital establishment. The report goes on to give a detailed account of the actual situation at the various naval hospitals, showing clearly wherein improvement may be made.

Following the example set by the army, the navy department assigned Surgeon W. C. Braisted to make observations of medical and sanitary matters during the latter part of the Russo-Japanese War under the immediate direction of the United States minister at Tokio. The results of his observations will be published as a separate special report. In general, Dr. Braisted confirmed the universal verdict that the Japanese have set an example which may well be followed by other nations in the management of the medical and sanitary problems of a great campaign. It is a matter of interest that the Japanese are at present equipped with twenty-four hospital ships. Two of these vessels were built especially for the purpose. It is urged that the navy department also give this matter its earnest attention. The value of hospital ships has been demonstrated, and, if they are to form a part of the naval equipment, they should be specially constructed for the purpose intended. To utilize vessels intended for commercial purposes can never in the future be satisfactory. The surgeon-general of the Japanese navy is quoted as saying that "the courses of the cases which were transferred to Sasebo Naval Hospital by a hospital ship were better than those sent back by a transport." It is furthermore pointed out that the usefulness of hospital ships is not confined to actual war, but should be of the greatest possible value also in the ordinary maneuvers of a peaceful fleet.

The report discusses many matters of importance to which we have not the space to allude. It indicates the active work which is being done toward perfecting this branch of the service, and, therefore, should be a document of interest to the entire medical profession.

TRAINING OF RAILROAD MEN IN FIRST AID TO THE INJURED.

IT is stated that the Erie Railroad proposes to have a medical equipment on each of its passenger trains, as well as to make provision for the care of those who may be injured in railway accidents on its lines. This is to be brought about in the first place by instructing the train crews in the fundamental principles of surgical care of injuries, and also by establishing small hospitals at convenient places along the road where the injured may be easily and quickly taken and receive such immediate attention as may be necessary.

It is somewhat extraordinary that this movement has not been inaugurated long before this. Within twenty-four hours we have had in this state an accident, the horrors of which might have been at least mitigated through some such provision as the Erie Road suggests. Fortunately, in this particular accident the collision occurred relatively near Boston so that surgeons and appliances were hurried to the scene in time to be of very material aid to the injured. Had the same accident, however, happened in an equally unsettled region fifty or a hundred miles from Boston and distant from any other large center of population, it is evident that the panic and deaths might have been very materially augmented. It is perfectly apparent that on such occasions immediate assistance is necessary to stop hemorrhage and to relieve suffering. It is equally evident that if such assistance is not forthcoming unnecessary deaths are sure to result. The character of the injuries, with the added possibility of burns, is always of a most serious character, and if, as seems to be the fact, accidents are inevitable, the least the railway companies can do for the protection of their patrons is to provide every reasonable means of protection against the results of such accidents as may happen. Were this done, as suggested by the Erie Railroad officials, it is evident that much suffering might be spared the unfortunate victims of the carelessness of railway employees. If anything were needed to stimulate the officials of various railroads to take action in the matter, it is such accidents as this to which we refer in which about twenty lives were lost and a far larger number seriously or painfully injured. As suggested by a contemporary, the example of one road will, no doubt, quickly be followed by others, and we should certainly look for the mitigation of suffering in the future which such medical provisions would entail. Relatively little instruction to a set of intelligent men would be of very distinct value. They should be taught how to stop hemorrhage, how to give hypodermic injections, and how, in general, to make a seriously injured person comfortable after a disabling accident. This undoubtedly could be and should be done.

FOOTBALL CASUALTIES.

THE ending of the football season gives food for contemplation in more respects than one. Each year sees a growing enthusiasm for the

game and its extension into secondary schools. There is no doubt that many more have been playing this fall than ever before, hence there should be no special surprise that the list of casualties is greater than in any previous year. It is, in fact, reported that the record of deaths this year is more than double that of the yearly average for the last five years. It is also a noticeable fact that many who have been killed, or who have suffered the most severe injuries, are school boys rather than college students. According to the statistics gathered by the *Chicago Tribune* 19 have died as the result of injuries received in the game, and those seriously injured number 137. This naturally does not include the slight bruises and accidents which every player receives sooner or later. Of those killed, 11 were boys still in the high school and 10 of these were seventeen years of age or younger. Three college students have also died, and the other fatalities were among non-collegiate players. Among the causes of death were violent blows on the body, blows on the head, injuries to the spine, and septicemia resulting from injuries. In addition to this list it appears that there have been 19 broken clavicles and fractures about the shoulder, 31 broken legs, 9 broken arms, 19 fractures of some of the bones of the head and other serious injuries of a like sort.

It is small solace to say that the best players are less likely to be seriously injured than the more inexperienced. As a matter of fact, they may be and often are very badly hurt, as recent experience has shown, but even if this were not so, the situation is no less unfortunate, if young boys in school are to suffer through their inexperience. The game is admittedly a drawing one and popular with the very best classes in the community as amply shown by the attendance at any of the great contests. However this may be, it is essential that the facts of a season's football games should be brought before the authorities and public alike in order that it may be fairly and finally determined whether the game after all is worth its cost.

MEDICAL NOTES.

Celebration of Professor Ewald's Sixtieth Birthday. — On the sixtieth birthday of Prof. C. A. Ewald of Berlin the *Berliner Klinische Wochenschrift* published, in addition to its usual text, a special Fest-Nummer devoted to a commemoration of Professor Ewald's life and work. It makes a goodly volume of one hundred and sixteen pages, and consists essentially of papers written by his former pupils. The recognition is both fitting and deserved and comes more opportunely at the sixtieth year than at a later period of life, although there is naturally nothing to preclude a further recognition as the years go by.

The Edward N. Gibbs Memorial Prize. — In December, 1902, it was announced that a prize of one thousand dollars, known as the Edward N. Gibbs Memorial Prize, would be awarded Oct. 1, 1904, for the best essay on the subject, "The Etiology, Pathology and Treatment of the Diseases of the Kidney." But two essays were received in competition, neither of which was deemed worthy of the award. It is therefore announced that the prize will be awarded Jan. 1, 1907, for the best essay on the same subject. This appears to be another instance of the failure to stimulate good medical work through the offer of a money prize. It is by no means a unique experience.

The Journal of Biological Chemistry. — A new journal has appeared to be called *The Journal of Biological Chemistry*. Its name implies the type of work which it will publish and is also suggestive of the broadening of medical research into chemical lines. The journal is under the editorship of J. J. Able of Baltimore and C. A. Herter of New York, which insures only the publication of such work as reaches a high scientific standard.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, Nov. 29, 1905, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 32, scarlatina 35, typhoid fever 19, measles 148, tuberculosis 40, smallpox 0.

The death-rate of the reported deaths for the week ending Nov. 29, 1905, was 18.35.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, Nov. 25, 1905, was 215, against 212 the corresponding week of last year, showing an increase of 3 deaths and making the death-rate for the week 17.85. Of this number 106 were males and 109 were females; 209 were white and 6 colored; 132 were born in the United States, 81 in foreign countries and 2 unknown; 47 were of American parentage, 147 of foreign parentage and 21 unknown. The number of cases and deaths from infectious dis-

cases reported this week is as follows: Diphtheria, 39 cases and 2 deaths; scarlatina, 23 cases and 1 death; typhoid fever, 18 cases and 3 deaths; measles, 156 cases and 2 deaths; tuberculosis, 47 cases and 25 deaths; smallpox, no cases and no deaths. The deaths from pneumonia were 36, whooping cough 2, heart disease 23, bronchitis 6 and marasmus 4. There were 11 deaths from violent causes. The number of children who died under one year was 41; the number under five years, 57. The number of persons who died over sixty years of age was 43. The deaths in public institutions were 62.

There was 1 case and 1 death reported from cerebrospinal meningitis during the week.

CENTENNIAL MEETING, ESSEX SOUTH DISTRICT MEDICAL SOCIETY. — The centennial meeting of the Essex South District Medical Society was held in Salem last week and proved an occasion of much interest. Dr. Arthur T. Cabot, president of the Massachusetts Medical Society, Dr. Frank Holyoke, Dr. John Holyoke Nichols, Dr. S. W. Torrey and a number of others took part in the formal proceedings, which were naturally largely historical in character.

NEW YORK.

SENTENCE FOR USING A FALSE CERTIFICATE OF DEATH. — After pleading guilty in the Court of Special Sessions to a charge of issuing a false certificate of death, Dr. George E. Morgan, a graduate of a homeopathic medical college and a licensed practitioner, has been sentenced to ten days' imprisonment in the Tombs and to pay a fine of $200. The certificate was issued to cover up the true circumstances of the death of a young woman in July last, which occurred after a criminal operation in a notorious " sanitarium " in 47th Street.

INDIGENT CONSUMPTIVES BETTER AT HOME. — The Committee on the Prevention of Tuberculosis of the Charity Organization Society has sent out to the physicians of the city a circular advising against the sending of consumptives in indigent circumstances to distant states, like Colorado, Arizona and California. Extensive experience has taught, the circular states, that, difficult as it may be for a poor man to recover from tuberculosis in the city of New York, he is better off there, among his friends and relatives and within reach of more adequate hospital and dispensary facilities, than he is far from home and thrown upon his own resources in communities where the great number of consumptives willing to work at the lowest wages makes the finding of employment, especially suitable employment, almost impossible. It then goes on to say: " Favorable results from climate can hardly be looked for unless at least ten dollars per week can be spent for board and lodging. We invite the co-operation of the medical profession, therefore, in preventing persons suffering from tuberculosis from being sent to other states unless they are physically able to work and have promise of employment, or unless they have at least $250 in addition to railroad fare."

CASH VALUE OF WIDOW'S CHANCES OF REMARRIAGE. — The cash value of a widow's chances of remarriage was a feature in a suit for damages tried in the Queens County Court on Nov. 20, which was brought by Mrs. Mary Briell, a young widow of Long Island City, against the New York and Queens County Railway Company. When a passenger on one of the company's trolley cars in August last, Mrs. Briell was thrown down by the sudden starting of the car while she was attempting to leave it. In consequence, she sustained certain injuries, among which was a wound over one eye which left a permanent scar. At the trial her lawyer claimed that the scar would unfavorably affect his client's chances of remarrying, in case she wished to wed again and the jury, apparently approving this contention, awarded a verdict of $1,000 for her.

VALUE OF LOSS OF HUSBAND. — On the same day another widow, Mrs. Katharine Raymond, secured an unusually large verdict, $12,500, for the loss of her husband, who died last spring in St. Vincent's Hospital in consequence of injuries received in a street car accident. While he was riding in an Eighth Avenue car last spring there was a collision with a mail wagon, by which he was fatally injured, and the testimony presented at the trial, before Justice Blanchard in the New York Supreme Court, was such as to establish the charge of negligence on the part of the motorman of the car.

RABID DOGS. — On Oct. 25, two children in Hackettstown, N. J., while playing in the yard of their home, were bitten by a strange dog. One of them, a little girl three years old, received such severe injuries about the face that it was thought advisable to send her to the Pasteur Institute in New York. The other child, apparently, was not sent. On Nov. 16 the Institute notified the parents of the girl that she could not live, and she was removed to her home, where she died on the following day, the death being attributed to hydrophobia. The dog which bit the children

was shot on the same day, but it was learned afterward that the animal had bitten about fifty other dogs in and near the town. Of these, twelve developed alarming symptoms, and were promptly put to death upon the order of the mayor of Hackettstown. The mayor, with the determination to remove, so far as possible, all sources of danger, appointed three dog hunters, who have since engaged in a war of extermination on dogs and cats.

Obituaries.

SIR JOHN SCOTT BURDON-SANDERSON, M.D., LL.D., F.R.S.P.

Professor Burdon-Sanderson's death is reported from London. He was born at Newcastle-on-Tyne, in 1828, was educated at Edinburgh University, studied medicine in Dublin and entered on its practice in London where he was medical officer of health from 1856 to 1867. He became medical inspector for the Privy Council, physician to Middlesex Hospital, superintendent of the Brown Institution and professor of physiology, University College. Subsequently he was made Waynflete professor of physiology at Oxford, 1882–1895 and then regius professor of medicine, 1895–1904, in which latter office he preceded Dr. Osler.

Professor Burdon-Sanderson was president of the British Association; he served on several commissions for investigating diseases; he was also a member of the Royal Society and a frequent contributor to its proceedings. On several occasions he delivered the Croonian lectures. He made important contributions to the physiology of muscles and nerves. His health had been failing for some years.

PROF. ALBERT VON KÖLLIKER.

In the death of Professor von Kölliker, which occurred at Würzburg, Nov. 1, Germany loses the last representative of the founders of modern biology. He was born at Zürich in 1817, and, therefore, had reached the ripe age of eighty-eight years. He originally studied medicine in the city of his birth and later went to Berlin as an assistant of Prof. Johannes von Müller. Thence he returned to Zürich as Henle's assistant and in 1843 became a privat-docent. He was extraordinary professor in the subjects of anatomy and physiology for two years and then accepted the chair of anatomy and physiology at the University of Würzburg, where Virchow was at that time teaching. Professor von Kölliker at once introduced new methods of study and insisted upon the use of the microscope. In spite of advancing years he continued his teaching in anatomy until 1898 and gave lectures on evolution until 1901. The remaining four years of his life he devoted to writing an autobiography.

Professor von Kölliker's contributions to anatomy, epitomized in his "Handbook of Human Histology," will long stand as a most notable contribution to medical progress. It was a somewhat unusual feature of his mind that he was apparently quite able, during the declining years of his life, to assimilate new and revolutionary ideas and to re-express them in his own language. When the neurone theory of nerve structure became popular in the early nineties, he was one of the first to adopt its teachings and to incorporate its results in the new edition of his book. The extraordinary possession of his mental faculties up to a very late period of life was most unusual, if not unprecedented. Few men have been able to cover as he had almost the entire period of modern scientific methods as applied to medicine. Although he had done his work many years before, his death will be felt as a distinct loss to the scientific world.

Miscellany.

THE TRANSPLANTATION OF ORGANS.

Alexis Carrel, Chicago, after noticing former work in this line, reports progress in experiments by himself and Dr. Guthrie at the Hull Laboratory of the University of Chicago in the autotransplantation and homotransplantation of organs.[1] At first difficulty was experienced in adapting the organs to the new blood supply by vascular anastomosis, but after a new method of suturing had been perfected, the operation became comparatively easy. A few of the results are given. The kidney has been transplanted into the cervical region of a dog and a comparative study of the urine from the transplanted and the intact kidneys made the third day after the operation. The heart of a dog has been transplanted on to the carotid and jugular of another dog. The heart was beating and the blood circulating through it. With Dr. Guthrie, he established an arterial circulation through the right inferior thyroid vein of a dog which had symmetrical hypertrophy of the thyroid glands. Marked changes occurred, and it thus appears that the reversal of the circulation in only one vein of a gland may alter the physiologic process. It is possible that we may thus add to our knowledge of the pancreas, spleen, etc. Carrel suggests that organ transplantation may become of importance in a clinical point of view; that perhaps myxedema, idiocy, etc., may be thus modified, and that even heteroplasty with organs of the higher apes may be of practicable advantage. Much more animal experimentation, however, will be required before the method can be utilized on man. While it is impossible to say yet what practical results will be obtained, he thinks it possible and even probable that it will open up new fields in therapeutics and biology.

[1] Journal A. M. A., November 25.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, NOV. 18, 1905.

CITIES.	Population.*	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diphtheria and croup.	Typhoid Fever.	Diarrheal Diseases.
New York	3,908,644	1,271	296	21.71	18.88	1.54	1.25	1.88
Chicago	1,990,750	310	108	21.75	15.09	2.44	.78	3.33
Philadelphia	1,407,968	407	94	21.62	16.48	2.94	1.47	4.66
St. Louis	633,606	—	—	—	—	—	—	—
Baltimore	542,229	187	45	19.78	13.90	2.13	4.81	1.06
Cleveland	444,251	—	—	—	—	—	—	—
Buffalo	400,645	—	—	—	—	—	—	—
Pittsburg	362,403	—	—	—	—	—	—	—
Cincinnati	338,377	—	—	—	—	—	—	—
Milwaukee	325,990	—	—	—	—	—	—	—
Washington	300,776	—	—	—	—	—	—	—
Providence	196,744	83	13	16.36	14.55	5.45	—	1.82
Boston	593,598	169	38	17.16	16.56	2.37	1.18	2.37
Worcester	127,963	30	6	10.00	13.33	3.33	—	—
Fall River	105,697	27	14	18.52	14.81	—	—	18.52
Cambridge	97,426	20	6	15.00	25.00	—	—	5.00
Lowell	94,845	27	10	18.52	7.41	3.70	—	—
Lynn	77,223	14	3	12.50	—	—	—	—
New Bedford	74,221	22	4	18.18	4.55	—	—	4.55
Springfield	73,484	16	2	6.25	12.50	—	—	—
Lawrence	69,989	20	5	15.00	20.00	—	5.00	—
Somerville	68,188	21	4	4.76	14.29	4.76	—	—
Holyoke	49,124	7	4	14.29	28.57	—	—	—
Brockton	47,782	9	0	44.44	—	—	—	—
Malden	37,980	6	2	16.67	16.67	—	—	—
Haverhill	37,818	13	1	30.77	15.38	7.69	—	—
Salem	37,586	18	5	—	11.11	—	—	—
Chelsea	37,377	8	3	12.50	—	—	12.50	—
Newton	36,294	7	—	14.29	—	—	—	—
Fitchburg	33,017	—	—	—	—	—	—	—
Taunton	30,952	5	0	20.00	—	—	—	—
Everett	29,108	10	1	20.00	—	10.00	10.00	—
Quincy	28,067	4	3	—	25.00	—	—	—
Waltham	26,239	11	—	18.18	9.09	—	9.09	—
Gloucester	26,008	—	—	—	—	—	—	—
Pittsfield	25,000	4	1	25.00	—	—	—	25.00
Brookline	23,424	10	3	10.00	—	—	—	—
North Adams	22,125	4	0	—	25.00	—	—	—
Chicopee	20,187	4	2	—	—	—	—	—
Northampton	19,943	6	0	33.33	—	—	33.33	—
Medford	19,638	2	1	—	100.00	—	—	—
Beverly	15,222	6	—	16.67	16.67	—	—	—
Newburyport	14,673	3	1	—	—	—	—	—
Hyde Park	14,492	5	0	—	—	—	—	—
Woburn	14,401	6	—	33.33	16.67	—	—	—
Melrose	14,294	3	0	—	—	—	—	—
Leominster	14,290	—	—	—	—	—	—	—
Marlboro	14,073	2	0	50.00	—	—	—	—
Westfield	13,609	4	1	—	50.00	—	—	—
Clinton	13,103	7	2	14.29	14.29	14.29	—	—
Peabody	13,097	—	—	—	—	—	—	—
Attleboro	12,702	—	—	—	—	—	—	—
Revere	12,647	5	—	40.00	—	—	—	—
Adams	12,482	—	—	—	—	—	—	—
Milford	12,105	—	—	—	—	—	—	—
Gardner	11,981	5	3	20.00	40.00	—	—	—
Weymouth	11,585	3	0	—	—	—	—	—
Framingham	11,549	—	—	—	—	—	—	—
Watertown	11,202	—	—	—	—	—	—	—
Plymouth	11,118	—	—	—	—	—	—	—
Southbridge	10,947	4	1	75.00	25.00	25.00	25.00	25.00
Wakefield	—	—	—	—	—	—	—	—

*As last reported.

Deaths reported, 2,979; under five years of age, 682; principal infectious diseases (smallpox, measles, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption), 608; acute lung diseases 491, consumption 359, scarlet fever 9, whooping cough 11, cerebrospinal meningitis 12, smallpox 0, erysipelas 6, puerperal fever 20, measles 8, typhoid fever 44, diarrheal diseases 77, diphtheria and croup 60.

From whooping cough, New York 3, Philadelphia 3, Baltimore 2, Worcester, Lowell and Holyoke, 1 each. From scarlet fever, New York 5, Chicago 2, Boston 1, Lynn 1. From cerebrospinal meningitis, New York 9, Baltimore 1, Worcester 1, Brockton 1. From erysipelas, New York 5, Chicago 1. From typhoid fever, New York 16, Chicago 4, Philadelphia 6, Baltimore 9, Boston 2, Northampton 2, Lawrence, Chelsea, Everett, Waltham and Southbridge, 1 each. From measles, New York 6, Chicago 1, Boston 1. From diphtheria and croup, New York 17, Chicago 13, Philadelphia 12, Baltimore 4, Providence 3, Boston 4, Worcester, Lowell, Somerville, Haverhill, Everett, Clinton and Southbridge 1 each.

In the seventy-six great towns of England and Wales, with an estimated population of 15,609,377, for the week ending Nov. 11, 1905, the death-rate was 15.6. Deaths reported 4,650; acute diseases of the respiratory organs (London) 209, whooping cough 44, diphtheria 57, measles 91, smallpox 0, scarlet fever 67.

The death-rate ranged from 6.2 in Hornsey to 22.6 in Merthyr Tydfil; London 16.6, West Ham 18.6, Brighton 10.7, Southampton 11.8, Plymouth 14.8, Bristol 14.5, Birmingham 14.9, Leicester 13.3, Nottingham 17.0, Birkenhead 13.9, Liverpool 19.9, Wigan 13.9, Bolton 13.2, Manchester 15.7, Salford 20.3, Halifax 13.9, Bradford 14.5, Leeds 15.9, Hull 13.3, Sheffield 12.9, Newcastle-on-Tyne 16.8, Cardiff 13.9, Rhondda 12.5, Oldham 16.0.

METEOROLOGICAL RECORD.

For the week ending Nov. 18, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

DATE	Barometer.	Thermometer.			Relative humidity.			Direction of wind.		Velocity of wind.		Weather*		Rainfall in inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A.M.	8.00 P.M.	Daily mean.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	
S. 12	29.78	47	56	38	67	67	67	S	W	S	W	C.	F.	0
M. 13	29.52	40	56	24	62	79	70	S	W	N		O.	S.	T.
T. 14	30.02	33	30	16	60	36	48	N	W	N	W	C.	C.	0
W. 15	29.90	34	46	22	66	73	70	S	W	S	E	C.	O.	.04
T. 16	29.53	46	50	41	87	79	83	S		N	W	O.	O.	T.
F. 17	29.66	40	44	37	69	58	64	W		W		20	O.	O.	0
S. 18	29.88	40	46	34	78	55	66	W		W		9	7	C.	C.	0
Mean.	29.76		47	30			67									.04

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. Means for the week.

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING NOVEMBER 25, 1905.

J. A. GUTHRIE, surgeon. Orders of Nov. 6, modified: granted sick leave for three months.

R. E. LEDBETTER, passed assistant surgeon. Detached from the Navy Yard, Norfolk, Va., and ordered to the "Glacier."

J. P. TRAYNOR, assistant surgeon. Ordered to the Naval Hospital, Boston, Mass.

J. MILLER, assistant surgeon. Detached from the "Lawton," and ordered to duty at Midway Islands.

G. G. HART, acting assistant surgeon. Detached from the "Glacier," and ordered to the Naval Rendezvous, Buffalo, N. Y.

F. W. TYREE, acting assistant surgeon. Detached from duty at Midway Islands, and ordered to duty at the Naval Training Station, San Francisco, Cal.

S. G. EVANS, surgeon. Ordered to the Naval Rendezvous, Denver, Col., Dec. 1.

J. T. MILLER, acting assistant surgeon. Detached from the Naval Hospital, Sitka, Alaska, and ordered home to wait orders.

SOCIETY NOTICE.

COMBINED MEETING BOSTON MEDICAL LIBRARY ASSOCIATION AND SUFFOLK DISTRICT BRANCH MASSACHUSETTS MEDICAL SOCIETY.—Surgical Section Meeting, Wednesday, Dec. 6, 1905, at 8.15 P.M., John Ware Hall. Subject: Traumatic Epilepsy. Dr. Dudley P. Allen of Cleveland will read a paper on, "Traumatic Defects of the Skull. Their Relation to Epilepsy. A Clinical and Experimental Study of their Repair." Drs. J. J. Putnam, W. N. Bullard, J. C. Warren, F. B. Lund, E. E. Southard, will also speak on the subject of the evening. Refreshments after the meeting.

JOSHUA C. HUBBARD, M.D., *Secretary.*

BOOKS AND PAMPHLETS RECEIVED.

Transactions of the Twenty-seventh Annual Meeting of the American Laryngological Association held at Atlantic City, N. J., June 1, 2 and 3, 1905.

Transactions of the Medical Society of the State of New York for the Year 1905.

Transactions of the American Association of Obstetricians and Gynecologists. Vol. XVII. For the Year 1904.

Original Articles.

OPERATIVE TREATMENT OF OLD FRACTURES AT LOWER END OF RADIUS.*

BY HOWARD A. LOTHROP, A.M., M.D.,
Instructor in Surgery, Harvard Medical School, Assistant Visiting Surgeon, Boston City Hospital.

FRACTURES at the lower end of the radius are extremely common. The exact lines and location of the fracture vary much with consequent degrees of deformity and of subsequent disability. In a loose way, without conveying any degree of accuracy as to the lesion, the term "Colles' fracture" is applied to most fractures in the lower one and one-half inches of the radius.

Pathology. — Lesions at the lower end of the radius may be grouped as follows: (1) Separation of epiphysis. In children the line of fracture is usually between the radial diaphysis and epiphysis. Often, however, the epiphysis has attached to it a fragment from the posterior portion of the lower end of the diaphysis (Case 9). This lesion produces a characteristic deformity, practically similar to that of group three.

(2) Fissures. Small fragments of bone. As a result of falls on the outstretched palm, it happens not infrequently that small fragments of bone break off from the circumference of the lower articular surface of the radius, or that fissures extend upward for a short distance. In these cases, except for subsequent swelling of soft parts and discoloration, the symptoms are chiefly subjective — pain and tenderness. There is no bony deformity upon which to base a diagnosis, but a suspicion of fracture may be verified by an x-ray examination.

(3) The common fracture at the lower end of the radius is a more or less transverse fracture situated one-half to one inch above the styloid process, the plane of fracture extending from before backward and upward. The lower fragment, therefore, is a distinct mass which usually includes the whole articular surface, both carpal and ulnar. Its displacement is one chiefly of degree. It may be so slight as to escape detection but this is unusual. It is displaced, to a certain degree, at least, in three directions, viz.: backward, upward and outward. Upon the degree of each will depend the resulting deformity. A certain amount of rotation of this fragment is common.

If there is much displacement there is invariably injury to ligaments. The radio-carpal ligaments remain intact. The injured ligaments are those about the lower end of the ulna, viz.: the triangular ligament (between radius and ulna), the anterior and posterior, radio-ulna and ulno-carpal ligaments. The new position of the lower end of ulna is due to the displacement of the radial fragment and the rupture of some of the ligaments mentioned. Further detail is not called for here.

Forward displacement of the lower fragment is uncommon. In such a case the exact position of the fragment would be discovered by x-ray, and if a neglected case with faulty union presented, correction by osteotomy could be accomplished as in cases with backward displacement.

(4) As bony complications of radial fractures, one must bear in mind lesions of the ulnar styloid and lower end of ulna and fracture of the scaphoid.

Before attempting to correct malunion of radial fractures in cases neglected or otherwise, the exact bony lesion must be determined by means of x-ray photographs taken in two planes, — antero-posterior and lateral.

Disability. — Except in the aged and under unusual circumstances, most radial fractures are recovered from with practically perfect function for ordinary purposes, but it is unusual to obtain a perfect position of fragments in cases where there has been displacement. The restoration of the lower end of ulna to its normal relation is the part of reduction that most often fails. Many cases recover with good function but with marked deformity and, on the other hand, the appearance at the wrist may be satisfactory and yet the function be poor. Hence, various factors may contribute to a degree of more or less permanent disability.

The following conditions may interfere with complete restoration of function: Deformity. The fragments may press on tendons; their altered position gives a new adjustment of articular surfaces and this, together with the displacement, interferes with motion. Pain restricts motion, due chiefly to displacement of fragments with nerve pressure. Adhesion between tendons and their sheaths is not uncommon. Deformity may persist with equal frequency in all cases; this is the commonest cause of persisting disability in children and young adults. The power of repair and adaptation is greatest at this period. In later adult life and in the aged the chief factors against good recovery of function are the tendency to form adhesions and the persisting chronic inflammation between joint and tendon surfaces, all of which may be aggravated by malposition.

Treatment. — The general indications for treatment of radial fractures are the same as for fractures elsewhere, viz.: (1) Complete early reduction (2) fixation until the repair is strong enough so that the fragments do not become displaced subsequently. Massage, baking, immersion in hot water and other similar procedures are often of great value in hastening the restoration of function. If the surgeon has carried out all of these measures, he has done all that can be done for the patient. The importance of immediate complete reduction under an anesthetic cannot be too much emphasized; otherwise, the case is started wrong and ever afterward all efforts are handicapped.

As to the mode and length of time of fixation, there is much divergence of opinion. I cannot agree with some surgeons who claim that reduction is all that is required and are satisfied to apply a simple roller bandage which holds a pad at the front of the wrist. I grant that with a careful patient a good result may be obtained

* Contributed to the fifteenth series of Medical and Surgical Reports of the Boston City Hospital.

thus, but it is not a safe method with average skill and in the ordinary case. Usually the tendency to some displacement is considerable and this tendency must be resisted.

As to apparatus, there are many types of splints and other fixation contrivances, some of which are better than others. A man skilled in the treatment of fractures could obtain a good result with most of them. The apparatus to advise, however, is the one that would be the safest and would give the best results when applied by those possessing average skill. The surgeon may select a splint already made for either the front or back of the forearm or he can shape a splint for himself out of splint-wood. Some prefer plaster of Paris. More skill is required in the use of the latter and it is not to be advised in the routine treatment of these cases. Personally, I am in favor of the anterior and posterior splints made out of splint-wood for each case.

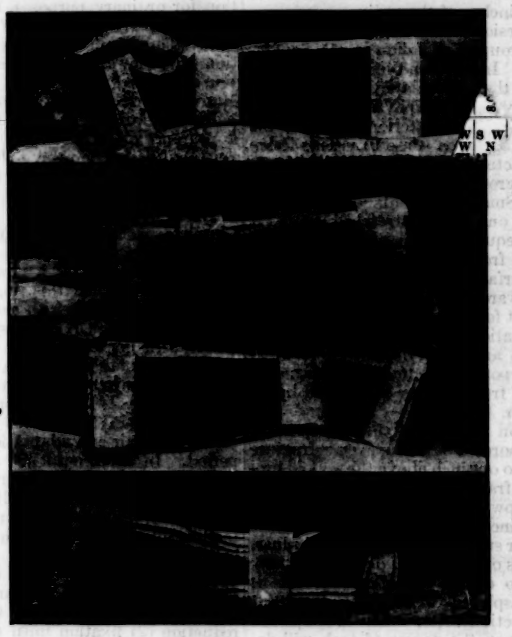
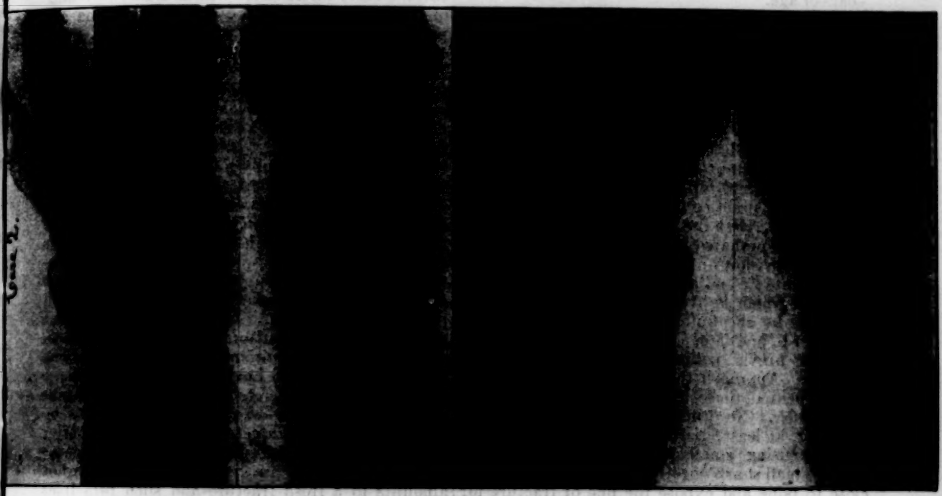


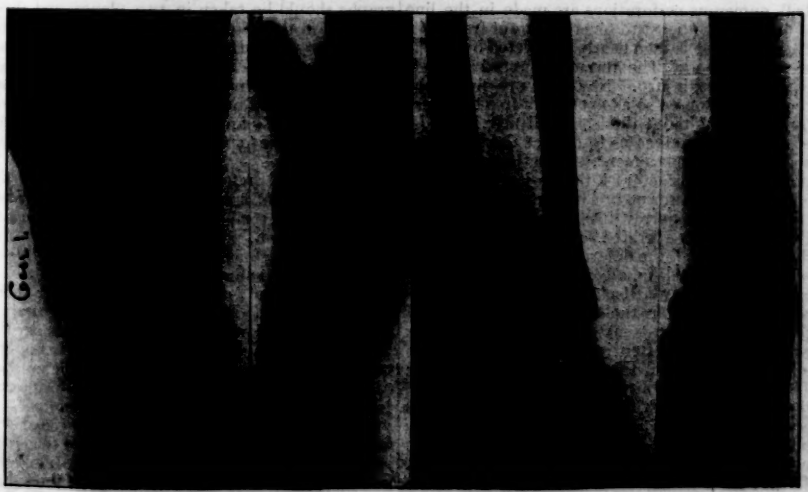
FIG. 1.

The object of this paper is, in particular, the treatment of old cases of fracture at the lower end of the radius where the result is unsatisfactory, either because of marked deformity, or poor function, or both. Such cases are numerous.

Ordinarily, there is no excuse for a marked degree of deformity if the case is obtained early and the patient has submitted to the treatment advised. For reasons other than that of deformity, there may be unavoidable poor function. The latter is so often dependent upon the former that subsequent effort for restoration of position is frequently justifiable. Restoration may be attempted in different ways according to the age of the fracture. For the first three to four weeks the fragments may be readjusted by manipulation with patient under an anesthetic. If this fails it is unwise to resort to the mallet, wrench or other mechanical device, for their use is crude and subjects the soft parts to unnecessary and harmful violence. The force is not properly directed and often an additional fracture results. Ordinarily, after the fourth week the site of fracture should be exposed and an osteotomy performed at precisely the point of fracture and the fragment restored to its original position. We have then the treatment of a recent fracture. For at least thirty years operative attempts have been made to correct cases of malunion.

Indications for interference. — In general, most cases of malposition should be corrected if seen before the expiration of the third or fourth week. After that time each case must be decided for itself and the choice of operation will be an osteotomy. One can offer excellent hope of correcting the deformity and be reasonably sure of improved function without much risk of making the wrist less useful. The younger the patient the better





the prospect of good function, but age is not a factor so far as concerns the restoration of fragments. Only in selected cases would it be wise to do an osteotomy in patients over fifty-five years of age.

Technic. — The following technic has been carried out in the cases reported: Accurate understanding of the displacement; ether anesthesia; careful preparation of the skin of forearm and hand; the hand covered with a sterile rubber glove; a tourniquet applied over a folded towel above the elbow. It would be wise to operate without a tourniquet on account of nerve pressure, but it is important to have the field of operation dry so that every step can be performed with precision. With practice the tourniquet may be dispensed with. Rest the forearm, the hand of which is held semi-pronated by an assistant, on a table. Make an incision on the external surface of the wrist about one and a half to two inches long, the center of which is over the fracture. A radial vein may be encountered which may be ligated or drawn to one side. Expose the tendons of the extensor brevis pollicis and supinator longus muscles. Approach the line of fracture in front of and behind these tendons without disturbing them much. No other tendons need be encountered, or, at least, disturbed much. Expose the fracture using small periosteum elevators for which small sharp curettes are excellent. Keep close to bone and expose the line of fracture for the full width of the radius front and back, reaching nearly to the radio-ulnar articulation. This is done with the elevators pushing the soft parts away from the bone without opening any tendon sheaths. The soft parts are held away by long narrow retractors. By means of a small bone drill, numerous perforations are made in the line of union so as almost to sever the lower fragment. The separation is then nearly completed by means of small chisels. The retractors guard the soft parts against injury. Now for the first time gentle force is used so as to entirely free the lower fragment. Without the least difficulty it will be possible now in all cases to correct the backward and upward displacement. Sometimes the position is more satisfactory if the projecting anterior border of the lower end of the upper fragment is trimmed with narrow-bladed rongeur forceps. If the fracture is operated before the expiration of the fifth week all the deformity may be corrected satisfactorily and in all cases, no matter how old, the backward displacement can be overcome. If, however, the shortening be great and the lesion chronic — say more than five to six weeks old — it is often impossible to restore the relative position of the lower end of the ulna. This is chiefly because of the readjustment of the soft parts which are held by new and strong connective tissue. It does not seem wise to use undue force to try to stretch this and there is nothing which can be severed with the knife. Hence, the lower end of the ulna still remains unduly prominent. This prominence can now be made to disappear satisfactorily by shortening the ulna. To accomplish this some operators have resected the head of the ulna. This would seem objectionable because it opens the wrist and radio-ulnar articulations. Such resection would seem to me to be indicated only in very chronic cases where there was unusual shortening of the radius so that the head of the ulna approached the lower row of carpal bones. The object of shortening the ulna is to avoid too great tendency of separation of the restored radial fragments when the styloid processes are held in proper relation and to avoid the unsightly prominence of the ulna head. A resection of a portion of the shaft of the ulna is the better method and it will generally accomplish the desired end. I am uncertain as to the best place for resecting but should favor a point as close to the head as possible without opening the radio-ulnar joint. This is accomplished through a one-inch incision over the ulnar side of the bone. The bone is subcutaneous here and no sheaths need be opened. Free the circumference of bone by means of small periosteum elevators. Apply a chain saw and remove a circular button of bone, in thickness according to the requirement. The ends of bone should be drilled and held in apposition by some suture material, preferably chromicized catgut or wire. The incision or incisions may now be closed and the tourniquet removed before or after the application of the splints.

From this point we have to deal with what amounts to a fresh fracture and such principles should be followed as would be required to restore and maintain the parts in a correct position. This is comparatively easy to control. The dressing must be applied evenly and the splints padded correctly.

On the day following operation x-ray photographs should be taken in two planes and these may show that some readjustment of position is necessary. A dressing should be done in two to four days, after which the padding and adjustment should not be disturbed. Some kind of fixation should be continued until union is firm enough to resist any tendency to displacement. As a rule the last splint should be continued four weeks.

The splints preferred by the writer are the shaped pieces of splint wood which extend from the bend of the elbow to the metacarpophalangeal articulation, possessing a moderate bend at the wrist joint so as to keep the hand a little adducted. Both splints have even layers of sheet-wadding. A pad is placed on the anterior splint between the wadding and splint corresponding to the anterior concavity of the forearm near the wrist, its lower end coming only as far as the line of fracture. The anterior splint may be cut out so as to allow for the thenar eminence. No extra padding is called for necessarily in connection with the posterior splint. If a pad is needed it is for the purpose of resisting the backward tendency of the lower radial fragment and it should be placed opposite this fragment between the splint and its padding. The arm is held semi-pronated, *i.e.*, thumb uppermost, thus allowing the greatest separation of the radius and ulna, and the splints


Case 4.


Case 3.



Case 5.

placed with planes parallel to each other and to the plane of the forearm bones. The whole is supported by a sling. The patient can be up and about after the first day. From time to time passive motion should be made at the wrist and the patient encouraged to move the fingers after the first few days. The anterior splint may be removed in three weeks and the posterior one in four weeks although judgment must be exercised in individual cases. Finally, massage, immersion in hot water, etc., hasten restoration of function.

The following cases illustrate the subject at hand. Some were private and others hospital patients and for the privilege of operating upon the latter I am indebted to my colleagues.

Case I. Woman, thirty-seven years. Patient was thrown from a carriage, sustaining a left Colles' fracture, scalp wounds and concussion of the brain. She suffered much from the head injury for two weeks. The fracture was recognized at time of injury but was, in a measure, neglected on account of the severer injuries. Patient was referred to me nine weeks after accident. Patient was in fair general health but neurasthenic. Local: The left wrist showed much antero-posterior deformity but practically no adduction or abduction of the hand. The line of fracture was transverse and about one-half inch above the lower extremity of radius; the displacement of the lower fragment was chiefly backward. The prominence normal for the head of the ulna had disappeared. Union was firm. All motions at wrist were greatly limited and rotation was almost absent. There was considerable pain at head of ulna.

Tourniquet. Incision 3 cm. on outer side of radius over point of fracture. Lower fragment made free in the manner described, little difficulty being experienced. The deformity disappeared at once. Wound closed with a buried subcutaneous suture. Position easily maintained with anterior and posterior pieces of splint-wood leaving fingers free. Wound healed by first intention. Splints removed in three weeks. There was considerable stiffness at the wrist. This was overcome by persistent massage. At the end of five months all motions at the wrist were normal. No perceptible deformity persisted.

Case II. Laborer, forty years old. Fourteen weeks ago patient sustained a Colles' fracture. Although treated at once the end result was very unsatisfactory. The degree of deformity was excessive and the impairment of function was such that he could not attend to his ordinary laboring work. The lower fragment was displaced backward, upward and outward to an unusual degree as shown by the x-ray.

The usual incision was made over the fracture at the outer side of radius. With only moderate difficulty the lower fragment was separated. When, however, this was free, it was impossible to overcome the unusual prominence of the head of the ulna. This was due in a measure to the contraction of the soft parts and the proliferation of connective tissue. Through the same incision an osteotome was introduced between the radial fragments, by means of which an osteotomy was done on the ulna. When the ulnar fracture was complete the wrist deformity disappeared at once. The wound healed without suppuration. The external appearance of the wrist was good. The radial styloid was lowest and the head of the ulna and the ulnar styloid were not unduly prominent. There was a little widening of the wrist. The x-ray shows the ulnar osteotomy was very oblique and it appears as though the lower sharp end of ulna were in contact with the lower fragment of radius. This condition did not interfere with rotation. Originally the backward displacement of the lower radial fragment was very marked; finally, it was only a little backward. The result was a practical correction of the deformity and much improvement in function.

Case III. Man, fifty-seven years. Four and one-half weeks ago patient fell sustaining a right Colles' fracture. Treatment neglected. General condition of patient good. Local: Unusually prominent silver fork deformity. All motions much restricted; grasp very weak. Patient unable to use right hand to any great extent both on account of restricted motion at wrist and on account of pain. Clinical and x-ray examination showed that the displacement of the lower radial fragment was chiefly backward; the lateral and upward displacements were moderate. Union was too firm to be broken up by manipulation.

A single incision was made over site of fracture on outer side of radius and the line of fracture exposed. By means of drill holes and small chisels the lower fragment was freed. With moderate force the normal position was almost restored. Healing by first intention and union firm in five weeks. Function practically complete in six months. Deformity scarcely perceptible.

Case IV. Woman, thirty-nine years. Four weeks ago fell on ice sustaining a left Colles' fracture. Injury was followed by pain and swelling but she thought it was only a sprain and had no medical attendance. At time of entrance to City Hospital there was a characteristic silver fork deformity. Patient complained of stiffness, pain at wrist and inability to adduct the hand. X-ray examination showed that the chief displacement of the lower fragment was outward; there was some backward displacement but really no appreciable degree of shortening as shown by the persisting normal relation of the two styloid processes.

The usual one and a half inch radial incision was made exposing the line of fracture. By means of bone drills and small chisels the radius was refractured at the line of union and the fragments were easily restored to their normal position. Healing by first intention; splints four weeks; union firm in five weeks. Deformity corrected, function excellent.

Case V. Woman, thirty-nine years. Seven weeks ago patient fell on an icy sidewalk sustaining a left Colles' fracture. Injury was followed by medical treatment but the deformity was not corrected. Backward displacement persisted to a marked degree. Firm union and fair function were obtained. Supination was greatly limited.

The line of fracture was approached from the radial side as usual and the lower fragment freed at the line of union. Numerous bands of fibrous connective tissue corresponding to periosteum were severed. Considerable prying of lower fragment was necessary to restore its position. The x-ray shows a satisfactory final restoration of the radial fragment. It will be observed that the ulnar styloid was broken but that the radial styloid is the lowest, thus establishing their normal relation. Some separation of the outer portion of the radial fragments persisted but there was sufficient area of contact for union to become firm in five weeks and the position continued unchanged. The final result was satisfactory in all respects.

Case VI. Man, forty-two years, machinist. Ten months ago patient sustained a Colles' fracture of the right radius. Notwithstanding medical treatment a greatly deformed wrist persisted. Union was firm but the arm was very weak. Because of the appearance and the weakness patient desired that an effort be made to improve these conditions. The original deformity is shown by the x-ray.


Case 8.



The radial incision was made and the lower radial fragment freed. Although this lower fragment was perfectly movable it could not be drawn down so as to restore the length of the bone or obliterate the marked prominence of the lower end of the ulna. This was because of the resistance of the soft parts. Hence, a second incision, one inch long, was made over the lower portion of the ulna on the internal side of the wrist. A circular button of bone, one third of an inch long, was removed from the ulna by means of a saw and the fragments of ulna held in apposition by a wire suture.

The wounds healed by first intention. The fracture in the radius was firm in four weeks. The union between the ulnar fragments was delayed and did not become firm for eight weeks. All splints were removed in five weeks and for four weeks longer patient wore a leather wrist band, the pressure of which was controlled by a buckle.

Eventually the union was complete without noticeable deformity. At the end of six months all motions were completely restored and the strength of the arm was satisfactory to the patient.

Case VII. Boy, ten years. Operated by Dr. H. L. Burrell at the Children's Hospital to whom I am indebted for the privilege of including this case. Two months ago patient fell with fracture of left radius near the line of epiphysis and diaphysis. He had immediate treatment by a physician and it was thought the fracture was reduced. At entrance examination showed a very marked silver fork deformity. X-ray showed marked lateral, backward and upward displacement of lower fragment. In the surgical out-patient department an attempt was made with the Thomas wrench to correct the deformity. This resulted in an additional fracture three inches above the styloid process and the original lesions remained unchanged. He was admitted to the hospital and operated upon by Dr. Burrell in the manner described above. Only the original radial fracture needed osteotomy. Healing by first intention. Splints were continued for nine weeks. Three months after discharge the condition was as follows: "Moderate silver-fork deformity and moderate abduction of hand. Relative position of styloid processes normal. There is a dorsal callus corresponding to the first row of carpal bones, the exact site of which could not be determined clinically. Flexion nearly normal; extension to line of forearm; pronation and supination normal; power of hand about half that of the other. Result is a great improvement over previous condition but would be poor in a recent Colles' fracture."

Case VIII. Boy, twelve years. A few hours prior to entrance to Boston City Hospital this boy fell on the palms of both outstretched hands. He sustained what appeared to be a separation of the lower epiphyses of both bones of each forearm. Under ether these epiphyses were replaced by the house surgeon. In the right arm all deformity disappeared at once; in the left arm the position of the epiphyses was restored including the relation of the styloid processes but there appeared to be a loose fragment on the front of the wrist which could not be made to disappear. There was also a deep abrasion on the front of the left wrist.

The x-ray photograph showed a large bony fragment on the front of the wrist lying partly in front of the ulna. The epiphyses were normal in appearance and position and the rarefication of the lower end of the radial diaphysis showed the origin of the fragment which was pushing the soft parts forward making a considerable prominence.

It required two weeks for the skin lesions to heal, at the expiration of which time a vertical incision, one inch long, was made on the front of the wrist. The tendons were carefully separated so as to expose the fragment which was removed easily and without disturbing the union at the epiphyseal line which was fairly firm. The wound healed by first intention.

The right wrist splints were removed in three weeks when the position and function were practically perfect. The splints were removed from the left wrist in four weeks. No deformity persisted. From the outset the motions at the left wrist were much restricted and this limitation of motion did not disappear entirely for six weeks. Eventually the function of both wrists was perfect and there was no deformity.

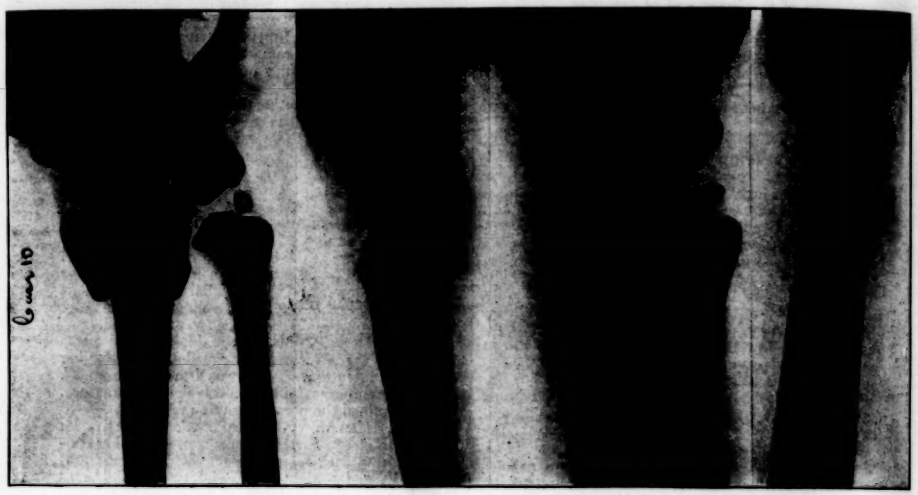
Case IX. Girl, ten years. Four weeks ago this patient fell injuring left wrist. She received treatment but examination at entrance to Boston City Hospital showed a characteristic silver-fork deformity. Although the function was fairly good it seemed wise to correct the deformity. X-ray showed that we had to do with a fracture at the epiphyseal line but there was a considerable fragment broken off the posterior aspect of the lower end of the radial diaphysis. This remained attached to the radial epiphysis. The chief displacement of the lower fragment was backward.

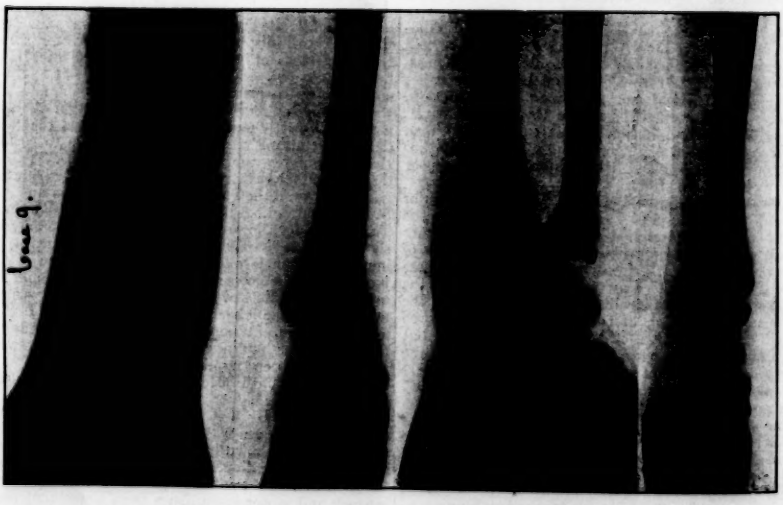
Through the radial incision the line of fracture was exposed and the lower fragment freed easily. Healing was by first intention. Union was firm in three weeks. There were no remaining clinical signs of fracture. Patient regained the normal function rapidly.

Case X. Man, thirty-five years. Conductor thrown from car to street thirteen weeks ago, sustaining contusion of head with cerebral concussion, dislocation of left thumb and a right Colles' fracture. All lesions treated at the time. Result of wrist treatment was not satisfactory for a marked deformity persisted and the function of the wrist was poor. The deformity was chiefly bony because the swelling had subsided. X-ray showed considerable displacement of lower radial fragment backward, outward and upward. Lower end of ulna was prominent. Adduction was much limited; union was firm.

Through the radial incision the lower fragment was easily freed at the line of union. As is always the case, the backward displacement can be corrected when the lower fragment is freed, even though the fracture be many weeks old. It is always more difficult to overcome the displacement of the lower end of ulna. If the fracture is operated before the expiration of six to eight weeks, it is uusally possible to correct the ulnar deformity; after that time it is impossible to correct this deformity without further interference. This is due to the fact that adhesions have formed about the fragments and the radio-ulnar articulations and because of contractions and adhesions between soft parts. This deformity, however, can be corrected largely by shortening the shaft of the ulna. For this purpose an incision was made over the shaft of the ulna at the junction of the lower and middle quarters and by means of a chain saw a quarter inch section was removed and the ends of the fragments held with a wire suture. Wounds were closed and anterior and posterior splints applied. The tourniquet which had been applied to the upper arm was not removed until after the dressing and splints had been applied.

Healing was by first intention. The external appearance of the arm was much improved; the position of the bones is shown in the radiograph. It is only a week since operation, hence the end result cannot be reported. In this instance alone there followed sensory and motor disturbance from tourniquet pressure but this will disappear in time. The duration of pressure was about one hour. The tourniquet was applied to the upper arm.


Case 10


Case 9.

CONCLUSIONS.

1. Fractures at the lower end of the radius are very common lesions. As a result of neglect on the part of the patient, or oversight or otherwise on the part of the physician, the final result is frequently unsatisfactory, either from the standpoint of function, or appearance, or both.

2. Appropriate treatment applied early should give as good a result as could be obtained in any given case; therefore, subsequent operation is not indicated.

3. In cases where the final result is not satisfactory, surgical interference of some sort is usually indicated.

4. During the first three weeks whatever union has taken place can usually be broken up by manipulation under an anesthetic and suitable apparatus should then be applied as for a recent fracture.

5. After the third or fourth week the best results are obtained by means of an osteotomy in the line of fracture, followed by treatment appropriate for a recent fracture.

6. In fractures which have existed for from two to six months osteotomy should always improve the position and frequently improves the function, although special consideration should be given each case.

7. After the expiration of six months it is more difficult to correct the deformity. The backward and upward displacement of the lower fragment can always be overcome, but the correction of the lateral displacement is more difficult and usually requires an osteotomy of the ulna. The function is rarely improved at this time. Hence, interference should be limited to selected cases.

GASTRIC AND DUODENAL ULCER.*

BY EDWARD M. BUCKINGHAM, M.D.

THE treatment of gastric and duodenal ulcer is of interest at present because of the recent entrance into this field by surgery. My attention has been turned to it by a small number of cases, following each other pretty constantly during several months, and leading to consideration as to what is the real teaching of experience. All my cases together are not enough to tabulate; yet their history teaches certain things that ought not to be ignored, but some of which seem to be forgotten.

Because the diagnosis between gastric and duodenal ulcer is often difficult, and is of absolutely no importance, unless the patient is to be subjected to operation, the name "peptic ulcer" is convenient as covering both varieties. It is asserted, with justice, that non-operative treatment has not been satisfactory. While this is true, yet it is equally true that it has often been carried out in a half-hearted way. In searching the hospital records, I was struck by the considerable number of cases of hematemesis, occurring in moderately young people a dozen or twenty years ago, and which were discharged well after only a week or ten days. It can hardly be assuming too much to suppose that many of them were really cases of gastric ulcer, that they were insufficiently treated and that if they had marked symptoms after discharge, they went to swell the list of medical failures.

That it is possible to have a series, either of new ulcers or of paroxysms of symptoms in one ulcer with long intervals between paroxysms, and wholly irrespective of treatment is shown by the case of Mrs. B. This lady, thirty-five years old was seen in consultation with her husband, a physician. For five years there had been occasional epigastric pain. In the last seven weeks pain had followed immediately upon the taking of food, latterly of any kind of food. In these seven weeks, seven rectal hemorrhages had occurred, each hemorrhage being preceded by sharp epigastric pain. The blood had sometimes been red, and the patient dizzy at the time. Examinations of heart, lungs, liver, kidney and rectum were negative. There was tenderness to the right of the epigastrium but no tumor. Seven years later I saw this lady again. There was then little tenderness and still no tumor. In general there had been little pain but there had been occasional hemorrhage, once enough to make her faint, and once blood had been vomited. Meanwhile she had been seen by a distinguished physician of the Massachusetts General Hospital, who had agreed with her husband and myself in the diagnosis of ulcer. There had, however, been no treatment, because the patient could never be made to see that the condition warranted the inconvenience of even restricting her diet. Still two years later the husband assured me that his wife was quite well. That ulcers do heal without treatment is abundantly shown by cicatrices found at autopsies, where no diagnosis has been made, and even in patients who have had no history of symptoms. It does not follow, then, that when a patient has a return of symptoms after a long time without them, his treatment has been a failure. Our knowledge of the cause of ulcers is imperfect, and it is entirely possible that similar causes may produce a new ulcer long after the original one has healed, for the patient must often return to the old conditions of life. Considerable periods of comfort followed by return of symptoms suggest equally, however, that the particular patient may never have been really well.

The case of Miss S. strongly suggests that there was no real recovery in the weeks before her hemorrhage, but that the symptoms were only in abeyance. This patient, a young adult, had had, four years before, gnawing, amounting to distress whenever the stomach was empty, and which was at once relieved by taking milk or other food. About an hour after eating, marked pain began in the epigastrium, lasting an hour or an hour and a half. She vomited once or twice but never blood. Nothing is known as to the treatment, except that it did not include complete rest. This illness lasted for months, but for the next

*Contributed to the fifteenth series of Medical and Surgical Reports of the Boston City Hospital.

four years she considered herself well. A few weeks before becoming my patient, being then a hospital nurse with good food but with sufficiently exacting duties, she again broke down. Distress and pain returned about an hour after any amount of food, however small. It is noteworthy as affecting treatment that pain always stopped on lying down. There was vomiting, but never of blood. She was sent to the Convalescent Home for a two weeks' rest and then to duty for four weeks. During this six weeks there were no symptoms. Then she suddenly became faint and went to her room. The next morning she again became suddenly faint, and shortly after vomited five or six ounces of blood. She was ordered absolute rest and nutrient enemata but was unfortunately allowed cracked ice. In thirty-six hours she began vomiting and in a short time got rid of 16 oz., mostly blood and blood clot. In as short a time as possible she was transferred to a surgical service and gastro-enterostomy was done. Some days later, on being allowed a little liquid food, hemorrhage returned in sufficient amount to blanch her. She was then fed solely by enemata and got well. Symptoms had not returned after a year, but she had done no work. This case is introduced here to illustrate long periods of quiescence, one of which occurred in the middle stage of this case. It will be referred to again for its bearing on treatment.

A somewhat similar case is that of Mr. F. This patient was engaged for months in superintending certain factory alterations in a small place where hotel accommodation was bad, the table being especially so. Several times he had severe epigastric pain, sometimes accompanied by vomiting, sometimes by tenderness and once by chilliness. This pain frequently went into the back but not always. One paroxysm lasted three weeks. A number of times he was obliged to return home on account of this condition. There he got his stomach emptied, generally with oil, and followed it with an opiate. After this he remained pretty quietly in the house for a few days, and while remaining quiet and decently fed, he was always free from all discomfort. This freedom from annoyance might last several days after returning to work. Finally, partial rest failed to give relief to pain and there was a slight hemorrhage while at home. Rest in bed was advised with alimentation solely by the rectum. On the following day he got up for a moment and had immediately a severe hemorrhage and fainted. As soon as possible afterward the stomach was opened and a large, deep ulcer was excised, a special suture being introduced by the surgeon to control hemorrhage.

All these cases, but in different degrees, show the need for continued treatment after apparent convalescence. All point to the need for careful consideration as to the possibility of ulcer when meeting with any disease of the stomach. The first two should teach modesty in claiming good results in any particular case, however treated.

The case, T. C., is also one in which either the ulcer was quiescent for a time, or in which it originated very rapidly. The first symptoms occurred with the beginning of a fatal hemorrhage. A boy, five years old, with a good previous history, was admitted to the Children's Hospital on the fourth day of illness with the following history: Onset sudden with adominal pain, nausea and diarrhea. There had been twenty or thirty dejections on the first day, small and composed of mucus and blood, afterward larger, brighter and foul. It is said that there was tenesmus, but this may have been a misunderstanding. There was certainly pain. The boy was well developed and nourished but thirsty, restless, apathetic and prostrated. Tongue dry and coated. Throat dry and glazed. Abdomen lax and apparently tender in the *lower* quadrants. Dysentery bacilli not present. Given castor oil and opium. During the first twenty-four hours in the hospital there were twelve dejections, becoming a brighter red and the sphincter became very lax, perhaps from the general condition. Dr. Stone was asked to give a surgical opinion as to the possibility of intussusception. He did not believe it present and would not operate if he did because of the patient's condition. Adrenalin and gelatin had no effect on the bleeding. A half pint of 2% gelatin with 30 minims of 1.1,000 adrenalin chloride were given twice. On the eighth day the child died with sudden hemorrhage. Autopsy showed duodenal ulcer. It is a very rare disease in childhood and I believe that this is the first case ever admitted to the Children's Hospital. It is, also, unfortunately, of interest because the diagnosis was made with certainty only on the autopsy table.

Hour-glass stomachs, adhesions and imperforate pyloric orifices with their results must, of course, be treated by the surgeon or not at all, unless, indeed, the orifice is closed by swelling, rather than by contraction or adhesion, a condition of which we could never be sure. With ulcers, however, of which the symptoms are pain, vomiting and hemorrhage, the case is not so plain. Non-operative treatment sometimes succeeds. Operative treatment sometimes fails.

To my mind ulcers having this last set of symptoms ought to be considered as a class by themselves. Their treatment ought to be classified not as surgical or non-surgical, but as excision or rest. The reason for making this distinction is that excision has a distinct aim of its own, while, on the other hand, rectal feeding, regulated diet, drugs or gastro-enterostomy all aim at giving rest to the ulcer without removing it. At first sight the idea of excision to get rid of the offending part once for all is beautiful in its simplicity. Surgeons, however, seem at present to prefer gastro-enterostomy. Aside from technical difficulty or question of shock, matters that I am not entitled to discuss, it is to be observed that excision does not guarantee against hemorrhage. I do not refer to the possibility of a second ulcer, because the surgeon will probably find that, if the patient's condition permits, I mean that after an ulcer has been removed, a fatal oozing

may continue. The case of Mr. F. referred to above illustrates this. Three days after excision there was a large, sudden dejection of blood accompanied by great pallor, sighing respiration, rapid pulse and cold extremities. From this condition he never rallied. At the autopsy no cause was found for hemorrhage. The stitches were tight and no other ulcer existed. There was a small patch of unsuspected pneumonia in one lung. Other cases of hemorrhage from the mucous membrane after excision of an ulcer are to be found in literature. It is fair to say that if the man's loyalty to his employers had not kept him at work as long as it did, it is likely enough that there would have been no post-operative bleeding. It is true, too, that he probably would have bled to death from an eroded vessel in the ulcer if it had not been removed. The point that I am making is that there was hemorrhage after excision of the ulcer, and from no fault of the surgeon.

Aside from excision and perhaps also from the internal use of hemostatics, all known treatment, and it seems all possible treatment, resolves itself into some way of keeping the ulcer quiet, and at the same time giving nutrition to the patient. Even the use of alkalies to remove acidity, if broadly considered, comes into this class.

It was hoped that gastro-enterostomy would allow liquid food to pass through the stomach without exciting peristalsis. Two of my cases are illustrations that this operation cannot be depended on to guard against hemorrhage. The first is the case of Miss S., reported above. Here, at least, it is altogether improbable that the hemorrhage came from a generally inflamed mucous membrane, as in the case of excision, just cited. It seems fairly certain that the patient bled, because the operation, while successful as an operation, failed to affect the stomach as it was intended to do. A second case is that of Miss W., twenty-one years old, a waitress, with incipient phthisis. Menstruation was always scanty and infrequent. Hemoglobin, 90%. Pulse strong. Table habits bad. For two weeks epigastric pain without relation to food. Vomiting after eating. No blood in vomitus. She was put in bed and food given solely by the rectum. Vomiting continued and enemata were badly retained. For two weeks attempts were made to educate the rectum, and with some success, but still not enough was taken in this way. When it was supplemented by the mouth vomiting began. Trials were made with large doses of opium and other antispasmodics, with bismuth and with no drugs at all, but without great result. No other cause for vomiting could be discovered, and at last there was a slight hemorrhage. The patient was, therefore, transferred to a surgical service and gastro-enterostomy done. She left the table in fair condition. Some hours later a small quantity of blood was spit up, and twice in twenty-four hours she collapsed. In the second collapse she died. Autopsy was not permitted.

The surgeons who did these three operations have kindly allowed me to use their notes. All the operations were urged by me quite as much as by the surgeons that performed them.

All the patients left the operating table in at least fair condition, and I see no reason to suppose that either operation was in the slightest degree responsible for the later hemorrhage. The fatal cases, I believe, would have died in any event. The point is that gastro-enterostomy is no more than excision to be counted on for certain relief. Probably it is less reliable, for there is the chance of direct bleeding from the ulcer as well as that of general oozing.

The most obvious way of securing rest is to put the patient in bed, stop all food by the mouth and give opium. Putting the patient to bed is an important factor. As I have shown, patients suffer more when walking about, and the explanation is evidently found in increased peristalsis. Absolute rest is not compatible with sucking ice for thirst. In this and in other affections melted ice is repeatedly swallowed in sufficient quantity to cause vomiting. Thirst can be relieved partly by wiping the mouth with a wet cloth, partly by giving the daily cleansing enema slowly enough to allow some of it to be absorbed. Feeding must, however, be kept up not merely to support life, but to give sufficient nutrition to heal the ulcer and the only way is by the rectum. This is an old treatment, but opinion seems to differ as to the extent to which it can be carried out. Some patients cannot, and some patients will not, submit to it as long as others.

Dr. Sears has pointed out that the rectum can be trained in this respect. The amount of food needed must vary in different cases and the weight shown by the scales, together with the appearance of the patient, appear to me a better guide than theoretical considerations. My own standard, if I have a standard, is the case of an old man whom I treated in bed for two years on a diet of two quarts of milk per day given by mouth without any apparent loss of weight. The indication in his case was want of teeth and senility. Probably a younger person would need a little more food. Opium, which is called for to check peristalsis and secretion, is supposed also to lessen waste. When the rectum rejects its contents it is not necessary to abandon the treatment. It can be omitted or reduced for a day and resumed with a small dose and gradual increase. When the patient cannot live on the amount absorbed from the rectum, we can use that as far as possible and supplement it by the mouth. Whether the ulcer has healed or not, it is fair to suppose that after a time the stomach has become weakened by disuse if by nothing else, and it seems wise to begin to train it as one does a baby's only more rapidly.

Published opinions as to the length of time needed for absolute rest differ widely. Remembering that ulcers have apparently existed without symptoms, it seems wise to leave a broad margin of safety and to continue full precautions for a considerable time after apparent recovery. Because of the possibility that apparent recovery may not be real and knowing that processes of

repair depend much on nutrition, it seems wise to push nutrition as far as may be. It is not necessary to leave off rectal feeding because limited mouth feeding has become possible. They can be continued together. Some of the above remarks seem absurdly simple to print, but some experience in reading and in conversation has convinced me that it is not so. The two following cases illustrate much of what has gone before.

Miss A., twenty-four years old, was sick in Sweden with gastric ulcer four years before entering the hospital. In the meantime she had been well. Six weeks before entrance she vomited a half cup of bright blood. From this time she commonly vomited three quarters of an hour after eating. Pain in the side extended into the back. Pain in the epigastrium became so severe after meals that little food was taken. No tenderness, but this quickly appeared. Ordered rest in bed, nothing by mouth. Enemata of peptonized milk 8 oz., one egg, ½ oz. brandy and 10 minims of deodorized tincture of opium every six hours. Pain stopped at once and never returned. Enemata retained. Slight tenderness for several days. On the twenty-fifth day there had been two pounds loss of weight and enemata ceased to be retained. They were, therefore, reduced to 6 oz. of the milk with egg, brandy and opium as before and were given every eight hours instead of every six. Small quantities of peptonized milk were now given by mouth and the quantity rapidly increased until the patient ceased losing weight. Peptonized milk was perferred because of its supposed rapid absorption and before beginning it, a tumbler of water was allowed, hoping to moisten and clear out the stomach which had been out of use for over three weeks. As soon as the loss of weight ceased, raw milk in small doses was added with lime water. When increase in weight was sure, this was gradually substituted for peptonized milk by mouth. Next toast was added. Then enemata were gradually increased and the opium in them was as gradually decreased until the fortieth day, when enemata were rejected. They were then omitted, meat was added to the diet and she was allowed to get up. She had regained her weight and was a picture of health, but was retained for another eleven days for observation at light work in the ward. In looking back it is seen that the girl lost two pounds in twenty-five days, her sole food being 32 oz. of peptonized milk, 4 eggs, 2 oz. of brandy and 40 minims of deodorized tincture of opium per day, and what water may have been taken up from the cleansing enemata. It is also seen that while the rectum rejected 8 oz. of milk with opium on the twenty-fifth day, it had been trained to retain 11 oz. without opium on the thirty-ninth, the quantity of egg and brandy remaining the same. It is also seen here as in the case of Mr. F., that tenderness is an inconstant symptom. The same is true of muscular rigidity.

I should be glad if this history ended here. Unfortunately it does not. She went to unusually hard work as a housemaid, and in about a month began having pain a half hour after meals, this pain being increased by exercise and relieved by rest. There had been a few small hemorrhages. It was six months after discharge that this was learned, and I do not know her later history. It does not seem likely that gastro-enterostomy could have offered her anything more, for it proved possible to give her stomach rest by the plan adopted. In light of the event and seeing how readily she took to the treatment, and remembering her former history of ulcer, it seems that rest and nutrition should have been pushed longer.

Mrs. S., twenty-four years old, proved a more difficult patient to treat. She was small, always weak, always flatulent, occasionally faints. For three months before entrance, daily vomiting. Pain in epigastrium and at its left, extends into back. Relation to meals not observed but relieved by vomiting. Tenderness greatest at site of pain. Spasm of left rectus. Blood not seen, but no menstruation for two months and the patient, habitually regular, was not pregnant. Weight, never over one hundred pounds, had dropped to seventy-one. Prostration marked. Two days after entrance vomited blood. Rest in bed. Peptonized milk 8 oz., 1 egg, brandy ½ oz., deodorized tincture of opium 10 minims, by enema every six hours. Nothing by mouth. The mouth was washed but complaint of thirst was great. An attempt was made to relieve it and at the same time add to nutrition by the use of one dram of frozen peptonized milk every six hours. It caused vomiting and was withdrawn. A tumbler of hot water was given in hope that a single stirring up of the ulcer would hurt it less than continued petty irritation. It caused purging and was withdrawn. The amount of opium was increased because of pain. As the patient continued to lose weight, milk in the enemata was gradually increased from 8 oz. to 10. This amount was used for twelve days and then the rectum failed. Reduced to 6 oz. with a full dose of opium it was retained. Once, enemata were obliged to be omitted for a day and were then resumed, 2 oz. with brandy and opium, twice a day, and gradually increased. Always the rectum was used for all it was worth, and the stomach made to supply the deficiency as far as it could. At one time she was getting by mouth 1 oz. an hour when awake. In a month she had lost ten pounds more; but her appearance was better, pain was less and vomiting after food was less. At the suggestion of Dr. Sears she was given sodium bicarbonate, 5 gr. per hour when needed, and this practically ended the pain. Between the forty-fifth and fifty-seventh days she gained 2½ lbs. and her hemoglobin went up from 60% to 70%, the greatest daily amount of food in this time being 24 oz. of peptonized milk and 6 eggs, part of the milk being given by the mouth. There had been no pain for two weeks Again in two weeks later the milk had been doubled, half by the mouth and the rectum was taking 24 oz. of milk and 7 eggs. From this time improvement was steady and she was discharged at her own request four months after entrance.

I regretted this. In view of her history it seemed to me that there was great hope of a brilliant result, but that it was too early, and I so expressed myself at the time.

The after history is that she steadily gained health and soon weighed seven pounds more than she had ever done. Menstruation returned in two months. For a time she was careful as to diet but then became careless. About a year after discharge pain returned near the cardiac end of the stomach, together with slight tenderness, and in the next two months she vomited a few times. This may mean ulcer or it may mean hyperacidity. This brings her history to date, and as she is not controllable at home, I have recommended her readmission.

This patient was so weak when first seen that I doubt if any surgeon would have cared to do any operation. The apparent situation of an ulcer near the cardiac orifice was not especially encouraging for a gastro-enterostomy. The case seems to me to offer encouragement for persistence in treating by non-operative rest.

In summing up this paper I wish to remind readers that it considers only those cases of peptic ulcer that are characterized by pain, vomiting and hemorrhage, without evidence of adhesions or contraction.

The points to which I have tried to call attention are these:

The onset of symptoms may be so sudden that it is impossible to guarantee any human being against death from hemorrhage within a few days.

Patients recover without treatment.

Patients die in spite of any treatment.

A return of symptoms does not of necessity mean the failure of previous treatment.

All treatment is directed either to excising the ulcer or to keeping it at rest, and at the same time feeding the patient.

Hemorrhage may follow any form of treatment, operative or non-operative.

A patient allowed to get up or to suck ice is not undergoing the rest treatment.

Nutrition is of importance as in treating any ulcer..

The rectum can be trained.

Whatever treatment be adopted, its continuance should include a broad margin of safety. This precaution has often been neglected.

A CASE ILLUSTRATING THE VALUE OF PERSISTENT CONSERVATISM IN THE TREATMENT OF UNUNITED FRACTURES OF THE LOWER LEG.*

BY GEORGE H. MONKS, M.D.

EXTENSIVE LOSS OF BONE AND SOFT PARTS IN BOTH LEGS; REPEATED OPERATIONS; BONY UNION ABOUT THREE YEARS AFTER THE ORIGINAL INJURY; RESTORATION OF FUNCTION SOMEWHAT LATER.

T. M., a single man, twenty-eight years old, an iron cutter by trade, was admitted to the First Surgical Service of the Hospital, April 6, 1900.[1] He had been injured while breaking up for a junk-shop an old iron tank which had formerly contained chemicals. The tank exploded while he was engaged in this work, and he was severely injured in both legs. He had also a few other injuries, less serious in character.

The patient was a large, strong and well-developed man. Though suffering from considerable shock he was quite conscious, and his pulse was of good volume and strength.

On the front of the *right leg*, about four inches below the tubercle of the tibia, there was a large wound, in which could be seen an extensive comminution of the tibia. At about the same level there was also a compound comminuted fracture of the fibula. The foot was warm, and the anterior tibial and dorsalis pedis arteries pulsated.

On the *left leg* there was a compound comminuted fracture of tibia and fibula, opening into a large wound about five inches long on the anterior aspect of the leg. The fracture of the tibia was on about the same level as the fractures on the right leg, but the fracture of the fibula was nearly four inches farther down the shaft.

Strips of cloth had been tied about both legs as tourniquets. When these were removed there was slight hemorrhage.

The patient was etherized, and, both wounds having been cleansed and rendered as aseptic as possible, Drs. Gavin and Lothrop removed the unattached fragments of bone, after which the remaining fragments were sutured together with silver wire. The loss of substance, both of soft parts and of bone, was extensive. The wounds were partially closed and drained. A plaster bandage was applied to both legs, from the toes to a point above the knees. Convalescence was uneventful, though no union took place between the fragments. About four months after the operation some sinuses in both legs, which had persisted since the operation, were explored, and pieces of silver wire and bits of necrosed bone were removed. From this time on, for over a year (in the course of which the patient had an attack of erysipelas), repeated efforts — operative and otherwise — were made by Dr. Gavin, Dr. Burrell and myself to secure bony union, and at times it seemed as if the fragments were beginning to unite, but after fourteen months there was still mobility between the fragments in both legs.

On June 20, 1901, I resected the ends of the fragments of the tibia and fibula of the *right leg*, cutting them squarely across, but saving as much of the periosteum as possible. When this was done there was an interval of more than an inch between the upper and lower fragments. These were brought together by silver wire sutures, two for the tibia and one for the fibula. Eight days later I did a similar operation on the bones of the *left leg*. After each operation a plaster of Paris bandage was applied to the leg operated upon.

Eight days after the last operation the wounds in both legs appeared to have healed by first intention. The temperature was normal, there had been little or no pain, and the general condition of the patient was excellent. Eight days later a stitch-hole abscess appeared in the left leg. About a month after the operation the patient was put into a wheel chair. There was still slight mobility in both legs. From this time until the patient left the hospital (about eight months) various expedients were employed to secure union,

*Contributed to the fifteenth series of Medical and Surgical Reports of the Boston City Hospital.

[1] This case, when admitted, came under the care of Dr. M. F. Gavin, by whose courtesy I report it. With the rotation of services, however, the man ultimately came under the charge of the other surgeons on the First Surgical Service (Dr. H. L. Burrell and myself).



FIG. 1. Showing, from the front, both legs of the patient in a standing position. The lower legs (from knees to ankles) are shorter by about two inches than they were before the accident.



FIG. 2. Showing the patient balancing himself on his right foot. The muscles of this leg have evidently contracted sufficiently to enable him to keep his equilibrium for an indefinite period.

position. The lower legs (from knees to ankles) are shorter by about two inches than they were before the accident.

FIG. 2. Showing the patient balancing himself on his right foot. The muscles of this leg have evidently contracted sufficiently to enable him to keep his equilibrium for an indefinite period.



FIG. 3. Showing the patient balancing himself on his left foot. The man could easily support his weight on this foot, but he could balance himself in this position for only a moment. It was, therefore, found necessary to steady him somewhat while this photograph (by time exposure) was being taken. The raising of the patient's second toe is suggestive of his effort to maintain his equilibrium.

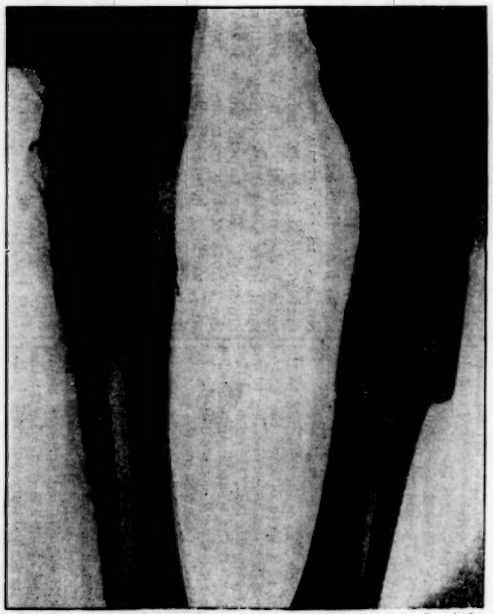


FIG. 4. An x-ray photograph, showing the united fractures in the shafts of both bones of both legs. In the right tibia there are two wire sutures, in the right fibula one, and in the left tibia one. There is some displacement of the fragments of the left fibula, but there is good bony union between them.

but at the time he left the hospital (March 29, 1902), some mobility was still evident in both legs. After leaving the hospital (which he did at his own request) he made frequent visits to the surgical out-patient department. At this time he was using crutches.

On May 29, 1902, he was re-admitted to the hospital, and carefully examined. A certain amount of mobility was still present in both legs, and the question of a double amputation was discussed.

It was decided to fit a Thomas knee splint to one leg and a leather splint to the other, and he was advised to wear the splints, and to use the legs as much as possible, for at least another year.

He left the hospital again about two weeks after his readmission, and went to Nova Scotia, where he remained for a long time.

On April 27, 1905, he was again admitted to the hospital for removal of a piece of wire, the end of which protruded through a small sinus leading to one of the old fractures on the left leg. He reported that after leaving the hospital the wounds suppurated a good deal but that after a time the bones united. He said that he had walked on his legs for the previous eighteen months, though freely only for the last six months. Ether was administered and the wire was easily removed. The patient was discharged from the hospital a day or two afterwards.

He says that in the autumn of 1903 he began to walk without crutches, and his ability to do so increased from day to day. He writes that during the following winter he sawed for household purposes twenty cords of hard wood and about five cords of soft; that in the spring of 1904 he worked three months as janitor of a large office building and attended the boiler for heating purposes, working fifteen hours a day; that during the following summer he did little else than odd jobs, but from September until January he was janitor of two large office buildings, also taking care of a boiler. His working hours at this time were seventeen hours a day, including Sundays.

A few months later he came into the hospital at my request and photographs and radiographs were taken, from which the accompanying illustrations were made. (See Figs. 1, 2, 3, and 4.) He walked with only a slight limp, and in other respects appeared like an able-bodied man. There was still one small sinus on the left leg from which a very slight discharge took place.

The man is now preparing himself for the purpose of becoming an automobile chauffeur.

Remarks. — This case is reported for the purpose of showing:

1. That union is possible in ununited fractures of the shafts of the bones of the lower leg after very long periods of time. In this case union took place about two years after resection of the ends of the fragments, and about three years after the original injury.

2. That, even in cases where the bones are considerably shortened (it was estimated that the shortening in this case was about two inches), the muscles will contract sufficiently to enable the patient to balance himself upon the injured leg.

ACCORDING to the *Journal of the American Medical Association*, in answer to the appeal for $6,000 by the Maryland Association for the Prevention and Relief of Tuberculosis for a year's campaign against the "white death," $627 have been received to date.

TUBERCULOSIS AND RELATED DISEASES OF THE LUNGS IN THE MEDICAL OUT-PATIENT DEPARTMENT.*

BY W. H. ROBEY, JR., M.D.,
AND
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ANY one who has ever served in the out-patient department of a large hospital must have been harassed by doubts as to how much good he has been able to do to patients with tuberculosis of the lungs. He must have compared his results as to both diagnosis and treatment with those obtained in his private practice, and the comparison could only be unfavorable to the out-patient department. If he is conscientious he must have asked himself how matters might be improved. The papers which follow represent the efforts of two members of the out-patient staff, working independently and using material from different services, to answer these questions.

DIAGNOSIS AND GENERAL CONSIDERATIONS.

BY RALPH C. LARRABEE, M.D.

During the months of June, July and August, 1905, 59 cases of tuberculosis of the lungs were treated on the male side of the medical out-patient department. Of these 55 were new cases. This is 7.3% of the total number of new cases treated. In the corresponding months of 1904, 6.5% of all new cases applying for treatment had tuberculosis of the lungs.

Of the total 59 cases, 22 were classed as early or incipient, 19 as well-marked and 18 as advanced. Few, even among the advanced cases, knew, before coming to the hospital, what they were suffering from. Apparently the public, or at least that part of it that frequents the hospital, is not yet awake to the importance of an early diagnosis in chronic coughs, and of the early treatment of consumption. It is also true that a surprisingly large number of physicians still pursue the mistaken policy of concealing from the consumptive the nature of his trouble.

Seven of the 59 cases came to us on account of hemorrhages from the lungs. There were four cases complicated by well-marked tuberculosis of the larynx, one by pleuritic effusion and one by tubercular peritonitis. Six cases had coincident non-tubercular diseases.

It is, perhaps, worth while to mention the unusual frequency of dry pleurisy during the latter part of the summer. Up to July 11 but 8 cases of this condition were treated. In the next seven days 17 cases were seen. The total for the three months was 43. Ten cases of pleurisy with effusion were also seen, these being scattered in their occurrence. By way of comparison it was found that in the corresponding months of the previous summer there were but 7 cases of dry pleurisy and 9 of pleurisy with effusion. Five of the 7 "dry" cases occurred during three successive days. On comparing the dates of these cases with the meteorological records of the two sum-

*Contributed to the fifteenth series of Medical and Surgical Reports of the Boston City Hospital.

mers it was at once evident that the greater number occurred during the periods of extreme hot weather. This was true only of the "dry" cases. Those with demonstrable effusion were about equally numerous in the two seasons and did not appear to depend at all upon climatic influences.

Remembering the recognized frequency with which pleurisy with effusion is the result of tuberculosis, the question arose as to whether the same were true of these cases of dry pleurisy. Some effort was made to solve this problem by the use of tuberculin and the fluoroscope, but the cases were too few and the results too doubtful to be of value. Clinically these mild pleurisies occurring in hot weather appear to belong in a different class from the ordinary sero-fibrinous ones. They are probably not tubercular in origin.

The diagnosis of tuberculosis in the 59 cases herein reported was based on the physical signs, the presence of the tubercle bacillus in the sputum, examination with the fluoroscope and the tuberculin reaction. Physical examination of the chest showed signs which were at least suggestive in all cases but one. In this one the lungs were negative on several careful examinations, but the history was suggestive and bacilli were present. Tubercle bacilli were sought in every case where the sputum could be obtained, usually at the first visit. The results were positive in 78%. Bacilli were found in 88% of the early cases, in 69% of the well-marked and in 79% of the advanced. The fact that they were present in such a large proportion of the early cases is probably due to our reluctance to accept a case as tuberculosis with very slight or doubtful signs if it lacked this proof. This conservativeness may have caused us to overlook an occasional incipient case. One must be more conservative in the diagnosis of tuberculosis among the poor than among the rich. If a well-to-do individual is sent to California for the winter because of a suspicious cough, which later turns out to be of innocent origin, no particular harm is done. But it is a serious matter in a poor family to take the principal wage earner from his work and send him to a sanatorium, perhaps at the expense of his savings of years, with the result also of making him more or less an outcast. If the diagnosis is proved there can be no doubt that he should be urged to take the most vigorous measures and to take them early. But if the diagnosis is really doubtful it is better to go a little slower and be sure.

The x-ray and tuberculin were used only on a few doubtful cases. The fluoroscope gives valuable information, especially in excluding negative cases, but great care must be exercised in interpreting positive findings. Thus, in this series three cases showed a shadow in one side of the chest, with limited excursion of the diaphragm, but none of the three reacted to 5 mgm. of tuberculin. In one the signs were due in all probability to fibrinous pleurisy, in one to emphysema and slight bronchopneumonia and in one to chronic influenza.

Tuberculin was employed in the following manner: The patient was given a thermometer and instructed to put it in his mouth for five minutes every two hours, to avoid shaking it and to return to the clinic in two days. If the maximum temperature was found to be normal 5 mgm. of tuberculin were given subcutaneously and the patient was told to continue the use of the thermometer for forty-eight hours more. The results were not very definite. Several cases were clearly negative. None were clearly positive. For example, one man returned with a maximum temperature of 100° and a severe pharyngitis. Whether the symptoms were due to the pharyngitis or to the tuberculin it was impossible to say.

The following case deserves especial mention. A Russian Jew, fifty-eight years old, complained of cough and pain in the back of four weeks' duration. There were numerous five, crackling râles in the right apex. The fluoroscope showed a shadow in the right apex with limited excursion of the diaphragm on the same side. Tubercle bacilli were twice absent and the tuberculin reaction was negative. For three weeks his condition remained about the same. The sputum was then sent to the pathological department which reported, "An organism resembling the bacillus of influenza in morphology and staining reactions found."

As regards diagnosis, the out-patient department is in a position to do work of great value to the community. As regards treatment after the diagnosis is made, it must always be far behind the sanatorium. During the three months' service herein described these facts were constantly borne in mind, and as soon as the diagnosis of tuberculosis was made, efforts were at once begun to place the patient in an appropriate institution, or under some other form of permanent treatment, with due regard to the peculiar circumstances of the individual. In the first place, 6 patients came to the hospital with hemorrhages or other complications calling for immediate, temporary recumbency. These were recommended to the wards. Four were accepted and 2 rejected by the admitting physician. Two patients were referred to their family physicians and 2 were still under observation at the end of the service. Twelve either refused to accept the advice given or disappeared from observation after the first or second visit. The remaining 37 were recommended to some institution or to some form of permanent treatment.

The results of the efforts to place these 37 cases were rather discouraging. For only a few could the State Sanatorium at Rutland be considered; some were too far advanced, most could not afford even the small price charged; only rarely did a patient refuse on other grounds. Eight patients in all were recommended. Only three ultimately got there and one of these is soon to be discharged as an unfavorable case. As for the Long Island Hospital, many were unwilling to go, others were willing, but lacked the necessary Boston settlement. Of 17 cases recom-

mended but three, all well-marked or advanced, reached the institution. Several of the cases who failed of admission to Long Island were recommended to Tewksbury by the Registration Department, and, in all, 7 of our cases reached the latter institution, all well marked or advanced. Seven were recommended to the Summer Hospital of the Association for the Relief and Control of Tuberculosis on Parker Hill. Six of these, all who applied, were accepted, and great credit is due the Association for its liberal policy. As this institution is only a temporary one for the summer months, and as the patients sleep at home, these cases cannot be considered permanently placed. One man was sent to a sanatorium in the West, one was sent to the country, while only one was kept under treatment as an out-patient.

These results are surely discouraging, particularly when we find that of the 22 cases classed as "early," cases in which permanent arrest of the disease seemed possible, only three could be placed under conditions giving the best outlook for such a result. One conclusion is sufficiently obvious; that, so long as sanatorium accommodations are as inadequate as at present, many consumptives of the poorer class will get their only care in an out-patient clinic. It is important, therefore, to consider the subject of ambulatory treatment.

AMBULATORY TREATMENT.

BY WILLIAM H. ROBEY, JR., M.D.

Eleven years ago I first saw pulmonary tuberculosis treated in the out-patient department of the hospital. I felt then that it was a hopeless condition as viewed from the out-patient clinic. Since that time there has undoubtedly been some improvement, but the question is, How much has the out-patient department alone been responsible for the change? More or less medicine was given at that time to each patient as a routine, with a slip containing the following directions:

1. Consumption is a contagious disease, but the breath of consumptives is not directly infectious.

2. The seeds of the disease are found in the phlegm or spittle which is coughed up, but it is not a source of danger till it has become dry.

3. Do not, therefore, spit upon the streets or upon the floor of your house or shop.

4. Indoors use a special spit-cup, which either contains water or is lined with paper. The cup must be often emptied into the pan of the water-closet, or into a bright fire, never anywhere else, and then washed out with boiling water.

5. Outdoors, use a bit of rag or paper, which should be burned as soon as possible.

6. Handkerchiefs should never be used for the phlegm; if used at all, they should be boiled for half an hour.

7. Keep your room clean; use a damp cloth for dusting.

8. Throw the windows wide open when you leave the room; at night, sleep with the window somewhat open from the top.

9. Consumptive patients should sleep alone.

10. Consumptive mothers should not nurse their children.

After a time this slip was given up, or at least distributed only occasionally, as the staff felt that the advice was not followed.

At present the method pursued by the out-patient staff is nearly uniform.

The case is carefully examined and the advice given according to the extent of the process. The weight and temperature are taken and the patient's environment is carefully studied. If the case is one of incipient phthisis with little or no reaction and we can from history and physical examination feel fairly certain of our diagnosis we recommend the patient to a sanatorium at once, but it is better in general, where the circumstances will allow, to study the temperature, weight and physical signs for two or three weeks to be sure that the case is not advancing too fast to make sanatorium treatment of little use. Some patients will keep about through a pneumonia and present themselves at the out-patient department in a state of revolution. I saw a delicate-looking young woman in the out-patient clinic with all the physical signs at the right apex and a history suggestive of phthisis, but without sputum. I thought she had incipient phthisis, but contrary to my usual custom I did not tell her or her friend, but requested her to come again in five days. She came, and her chest was entirely clear. We have to consider this possibility before making a positive diagnosis or sending to a sanatorium.

Except in certain cases the patient is told of his condition, especially if he is alone. The importance of this is twice as great in an out-patient clinic as in private practice. If accompanied by a friend the full seriousness of the condition is strongly pictured to him. The patient may not come again, and before he seeks advice elsewhere he may do great harm to himself and friends, if the true condition is not told him.

We point out to the patient and his friends the contagiousness of phthisis and by strongly emphasizing it we gain in some instances three points. We impress or try to impress the patient with the importance of personal cleanliness; we engender in the family a fear of infection, and by so doing we secure their co-operation in the patient's cleanliness; we may, to the patient's advantage, secure a residence in a sanatorium because the relatives fear to keep him at home and so are moved to secure the means for his maintenance.

By cleanliness we mean the care of his body and clothing, keeping the moustache and beard short and the fingers free from sputum when using the spit-cup. We urge them to protect their friends by not kissing them, by having separate dishes which shall be treated with boiling water after using and by the careful use of the spit-cup or small rags which can be burned.

If the physical condition allows and the patient's means are sufficient, we urge sanatorium treatment. If every case could be trained in a

sanatorium, even for a short time, the subsequent care and treatment at home would be much more profitable. Every phthisis patient who learns how to live in a sanatorium and returns to the community makes the work with others just that much easier. Every patient who has had friends or relatives who have slept through the winter in rooms with the windows wide open is more willing to believe in our advice.

If the patient's financial condition will not permit him to leave home, then we instruct him how to live there. The environment is considered and the patient urged to better it if possible. A few of my cases have had friends in the interior of the state, some conducting small farms and have been advised to go to them. The patient is told to be out in the air as much as possible, to sit well covered up in the sunshine and not to omit this part of the treatment because he does not feel as well one day as another. This absolute rest applies particularly to the cases accompanied by fever. He is told to sleep in a room by himself, to have the windows wide open in winter and summer and to make himself comfortable in bed with sufficient covering.

A diet list is given suggesting plain, simple food without beer or liquors. Ordinarily the patient is advised to drink a quart of good milk daily and to take a raw egg after each meal.

About a year ago the out-patient staff made out the following directions, a copy of which is given to persons with diseases of the lungs:

FRIENDLY ADVICE TO PERSONS HAVING DISEASES OF THE LUNGS.

Although you may have trouble in your lungs, and be suffering from the disease called tuberculosis, you may get well, as thousands of others have done, by strict adherence to the following rules:

Be out in the fresh air as much as possible. If you cannot have work out of doors, go to the house door or to an open window, and take twelve full breaths. Do this six times each day. Do not work in a dusty place. Get in the sunshine as often as you can. Sleep in a clean, well-aired room, with windows open and go to bed early. Avoid crowded rooms where the air is close, and where there is much smoking. Eat plain, simple food (eggs, meat, bread, oatmeal, macaroni, rice, vegetables, milk, cream and butter). If possible, have some hot liquid food before you get up in the morning and at bedtime.

Spend your money for good food rather than for medicines. Do not drink whiskey, rum, gin, brandy or beer. Keep clean.

Take a sponge bath each morning. Rub the skin well with a coarse towel.

Do not swallow what you cough up. Protect your friends and neighbors from taking this disease from you by burning what you cough up or by throwing it down the water closet. What you cough up contains the germs of the disease, and if it dries, it soon becomes dust and flies about in the air and your friends, breathing this dust, are liable to catch your disease. Never spit upon the floor or in the street.

Do not spit into your handkerchief, but use a spit-cup or have small pieces of cloth or soft paper to spit into. Do not put them into your pocket, but collect them in a paper bag, and burn bag and all when you get a chance.

Try not to cough. When you must cough, hold a piece of cloth in front of your mouth, so that particles shall not fly out into the room. Do not sleep with another person. Have your knives, forks and spoons washed with boiling water. Handkerchiefs should be boiled for half an hour before washing.

Recently medicines have been given only to correct certain symptoms.

In hopeless cases with considerable cough and sputum the patients have been advised, largely for the sake of their families, especially where there was great poverty, to go to Tewksbury or the Long Island Hospital, and a few have availed themselves of the opportunity.

In two consecutive services within twelve months, one in the summer (1904) and one in the spring (1905), I saw 43 new cases in which the diagnosis of phthisis was made either from the physical signs and history or with the addition of tubercle bacilli in the sputum. There were also 9 cases of pleurisy and 12 of pleurisy with effusion. Each patient was given the directions necessary in his case. The visits made by each individual to the hospital were as follows: Two came 9 times, one came 6 times, five 4 times, eight 3 times, twenty twice, and twenty-seven once. We personally visited these cases and 31 could not be located. Some that could not be found were thought to be living and apparently in good health. Six of the pleurisy with effusion cases were admitted to the hospital. Seven of the phthisis patients went to Tewksbury or Long Island. Three cases were known to have died at their homes. In only two cases were the full directions of the hospital carried out in detail, and in one, which was well advanced, apparently no particular had been omitted. Several had large well-aired rooms. One man had a large room with three windows always open, but slept with his grandson. One patient was fairly well and able to do light work as long as his wife lived, after which he broke down through insufficient nourishment and had to go to Long Island.

There is evidence that many try to follow the hospital directions as nearly as their means and intelligence will permit. One thing is clear: the out-patient department must do more to observe its cases of pulmonary disease; to make sure that patients understand the directions and that they do their best to follow them. Perhaps the time will come when the majority of tuberculous patients may be taught how to live by a residence in a local sanatorium. A short time after the first visit patients with tuberculosis should be sent for and, if they do not respond, should be looked up by the visiting physician or his house-officer. Every effort should be made to learn how patients live. The nurses of the Boston

Association for the Relief and Control of Tuberculosis are doing an excellent work in this respect but they should not be expected to relieve the out-patient physician of his responsibility.

A STUDY OF THE GASTRIC CONTENTS IN TWENTY-ONE CASES OF TABES, IN THREE CASES DURING GASTRIC CRISES.*

BY M. P. SMITHWICK, M. D.

VARIOUS theories have been advanced to explain the production of gastric crises, in some the origin being central and in others peripheral. According to Sahli [1] the crisis or a good number of its phenomena are dependent upon hypersecretion with hyperacidity. Similar conclusions have been reached by other observers.[2] The acidity in reported cases seems to follow no fixed rule. Ewald,[3] in 37 cases of gastric crises, found hyperacidity in 9, normal acidity in 9 and hyperacidity in 19. In one case during a crisis HCl was absent.

Following is a report of analysis of stomach contents in 21 cases of tabes. Three cases had gastric crises and in these analyses were made during attacks. The activity of secretory and motor functions in the different analyses is shown in tabular form. In estimating the amount of pepsin 25 cc. of filtered gastric contents was made normally acid with HCl and kept at 30° to 40° C. until it had digested .05 gm. of coagulated egg albumin. As most of these were cases in the neurological out-patient department of the Boston City Hospital, the unsatisfactory method of estimating the motor function by the amount of contents one hour after an Ewald test meal was resorted to. In every instance the the contents were removed through a stomach-tube with a very compressible bulb by siphonage compression and aspiration, no vomitus being included. After removal of contents successive measured amounts of water were introduced and measured on removal to determine the exact amount of contents.

W. J. G., male, forty-two years of age. Referred for examination by Dr. W. B. Bancroft, June, 1900. Well until two years before above date except for pneumonia in boyhood, grip six years ago and gonorrhea six times. Denies syphilis. 1896 had "rheumatic" pains in calves of legs one month. Exposed to venereal infection since fifteen years old. January, 1898, had severe epigastric pain with vomiting after supper of corned shoulder. Morphia was given by his physician. At first attacks would yield to ¼ gr. morphia subcutaneously and the interval was two weeks or longer. Now requires ½ to ¾ gr. Food has no influence. Attacks usually come before breakfast, epigastric pain, nausea, vomiting. Never any food in vomitus of a morning attack. During month preceding my examination called the physician thirteen times for a subcutaneous injection. No digestive symptoms between crises except constipation.

Examination. — Left pupil dilated, right small; neither react to light and both to distance. No paralysis ex. oc. muscles. No areas of anesthesia found. Knee jerks absent. No Romberg. Distinct circular scar on glans penis. (Patient has noticed it since his eighteenth year, but is ignorant of the cause.) Stomach gently inflated, is normally situated and extends to bottom of umbilicus showing moderate enlargement. No tumor felt before or after inflation. Physical examination otherwise negative.

First test, June 23, 1900. — No food since previous evening. At 5.45 A.M. gastric crisis began. At 7.20 A.M., while pain was intense, I gave ½ gr. morphia subcutaneously and at 10 A.M., after cessation of pain, gave bread 30 gm., water 300 cc. One hour later removed 280 cc. browinsh contents with odor of vinegar and rancid. Acid to litmus.

Free HCl absent. (Phloroglucin-Vanillin.)
Total acidity, .109%. (Phenolphtalein.)
Blood pigment, absent. (Webber. Müller.)
Combined HCl, absent. (Ewald-Sjovist.)
Acetic acid, recognized by odor.
Butyric acid, present.
Biuret, absent.
Lactic, intense reaction. (DeLong.)

Second test, July 9, 1900. — Had eaten freely of meat and vegetables for some days preceding this examination, the last meal being at 4.45 P.M., July 8. At 7 A.M., introduced and removed successively, several measured amounts of water, finding stomach practically empty. Washings were acid to litmus; no food macroscopically. Free HCl absent. (Phloroglucin-Vanillin and tropeolin.) Microscope showed occasional striated muscle fiber and connective tissue. No blood. Considerable squamous epithelium and frequently polynuclear leucocyte, and occasionally a salivary corpuscle. One hour after, bread 30 gm., water 300 cc., removed 30 cc.+, stomach not emptied completely. Contents acid to litmus.

Free HCl, present. (Phloroglucin-Vanillin) .05%. (Töpfer's reagent and tropeolin.)
Total acidity, .22%.
Filtrate, dextrin (IKI).

The patient died of pneumonia, in this hospital, Dec. 14, 1902, on the service of Dr. Henry Jackson, and the autopsy by Drs. Roberts and Southard confirmed the diagnosis of tabes. The autopsy records place the lower limit of the stomach 4 cm. below umbilicus, the wall rather thin but healthy, and contain the following description of the spinal cord: Envelopes normal. No increase of subdural fluid. On sections cervical and dorsal regions appear normal. The posterior columns of the lumbar region show small, irregular, grayish-white areas .5–1 mm. in diameter. Again, in places, small, darker areas are seen in each column, irregular in contour, about the size of the head of a pin. The dorsal horns appear set in from the lateral fissure and bend towards each other.

D. C. (history from patient and from his wife), seen Feb. 19, 1899, at Boston City Hospital in clinic of Dr. H. D. Arnold.

Syphilis, 1887. Internal treatment begun one year later and continued one year. Ptosis left upper eyelid, 1897, four months. Diplopia then and at times since. Also pain in left eye at times. Pain in knees occasionally; walks as well in dark as in light. Married, 1888. Three healthy children. First had rash at six months, while teething. Wife has not miscarried and is healthy. She says coitus averaged two or three times a night the first two years of married life. After that one or two times. The month before our examination, desire had apparently ceased.

Well, until October, 1895, when, during supper, severe pain began, referred to lower ribs and then to

*Contributed to the fifteenth series of Medical and Surgical Reports of the Boston City Hospital.

[1] H. Sahli Correspondenzb. f. Schweizer Aerzte, 1885.

[2] Maladies intrinsèques de la moelle epinière. Traite de Medicine. Tome IX, 1904.

[3] P. Marie. Centralbl. f. d. gesammt. Therapie. Oct., 1904.

epigastrium. Pain and vomiting lasted all night and for two weeks, except when morphia was given. After complete relief for six months, pain returned for one week and again after five months' relief. Pain is chiefly in epigastrium with chilly feelings and vomiting. May come several times daily. It often came immediately after eating, but might come at any time even after a day's fast. Has not ceased longer than two or three weeks at a time the past year. At times, pain will not yield to less than 2 gr. of morphia subcutaneously. No stomach trouble between crises.

We had reported that the analyses of gastric contents would not explain the attacks of pain before Dr. Arnold examined patient. Dr. Knapp confirmed his diagnosis of tabes.

First test. — (Some hours after a crisis relieved by morphia 1 gr. subcutaneously.) Ten A.M., Feb. 4, 1899. One hour after, bread, 1 oz.; water, 10 oz.; removed 12½ oz. contents of olive green color and slimy. Free HCl, .028%. Töpfer's reagent and tropeolin.

Combined HCl, .073%. Yeast increased. No blood or sarcinæ.

Organic acids and acid salts, .014% fungus present; total acidity, .113%. Succinic acid present.

Twenty-five cc. of filtrate + gtt. iv dilute HCl + .05 gm. coag. egg albumin nearly digested in three hours at 37.5 C.

Second test. — Feb. 8 (some hours after crisis, relieved by two 1-gr. subcutaneous morphia) in morning. (No food since previous evening.) After removing from stomach 50 cc. slimy green fluid, gave bread, 30; water, 300, and in one hour removed 50 cc. contents showing following test: Free HCl (Phloroglucin-Vanillin, Töpfer's reagent, Tropeolin), .07%. Total acidity, .19%.

Third test. — No crisis for twenty-four hours, and no food for twelve hours. Emptied stomach and gave bread, 30; water, 300, and after one hour removed 30 cc. +. Free HCl (Phloroglucin-Vanillin and Töpfer's reagent), .09%. Total acidity, .20%.

Fourth test. — (Five hours after crisis.) Crisis at 7 A.M. relieved by morphia. Piece of bread and glass of water at noon, and removed two hours later. Amount 420 cc., faintly acid to litmus.

Free HCl absent. (Phloroglucin-Vanillin, Tropeolin and Töpfer's reagent gave yellow and congo-red paper gave no reaction.)

Biuret reaction, present.

Lactic acid, present. (Kelling and DeJong.)

Fifth test. — (During crisis.) Feb. 21. Before giving test-meal (Ewald), removed from stomach greenish fluid (fungus), acid to litmus. Free HCl absent. One hour after, bread, 30 gm.; water, 300 cc. Contents acid to litmus, showed:

Free HCl, absent. (Phloroglucin-Vanillin, Töpfer's reagent, tropeolin.)

Total acidity (Phenolphtalein), .07%.

Filtrate showed dextrine (IKI).

Biuret present. Succinic acid present.

Microscopic, no blood, no sarcinæ.

Sixth test. — (Not during crisis.) Feb. 24. Amount contents one and one-half hours after, bread 30 gm., water 300 cc., 60 cc.

Free HCl (Phloroglucin-Vanillin, Töpfer's reagent, tropeolin), .058%.

Combined HCl (Alizarin), .043%.

Organic acids and acid salts, .050%.

Total acidity, .153%.

Seventh test. — (During crisis.) Feb. 26. At 4 A.M. emptied fasting stomach of 2½ oz. golden yellow fluid, and introduced measured amount of water and recovered the same. This fluid was acid to litmus. Free HCl absent. (Phloroglucin-Vanillin, Töpfer's reagent, tropeolin.) No color with congo paper. Gave bread, 30 gm., water, 300 cc., and after one hour, during which the intense pain had continued, removed 6 oz. Acid to litmus.

Free HCl absent. (Phloroglucin-Vanillin, Töpfer's reagent, tropeolin.) No color with congo-red paper.

Biuret present.

Total acidity (phenalphtalein), .038%.

Filtrate gave achro-odextrin (IKI).

C. H. P., male, clerk. Thirty-two years of age at examination, November, 1898. Gonorrhea 1886. No history of syphilis. Since June, 1897, subject to severe, repeated attacks of painless nausea, and vomiting of one or several days' duration. The amount of vomitus was very large. Has been treated in several hospitals and by many physicians in this country and in Europe. Between attacks no digestive symptoms usually, except constipation. Bowels move every week-day, but patient considers them very sluggish. Says attacks always terminate when free catharsis is induced. Regulation of diet failed to prevent attacks, but regulation of bowels in this, and in one of the other two gastric crisis cases, seemed to act as a partial preventive. Treatment of the attacks was ineffective.

Examination. — Tall and poorly nourished. Pupils equal, react to distance, but scarcely at all to light. No nystagmus. Knee jerks present, but much diminished. No Romberg. No special ataxia. Tactile and painful sensation much diminished over an area to left of lower end of sternum. No bladder symptoms. No tremor or speech disturbance. Moderate ptosis or enlargement of stomach. Fecal masses in ascending colon. Urine normal. In March, 1899, this patient was referred to Dr. J. J. Thomas to determine if these attacks were tabetic crises, as I suspected. Dr. Thomas was inclined to consider it tabes.

Examination, November, 1905, showed pupils immobile to light, paralysis of right oculomotor nerve, absent patellar and achilles reflexes. Romberg. Gait ataxic and characteristic. Sexual desire and power nearly gone. No crisis since 1900. In March, 1899, Dr. Alexander Quackenboss found the fundi normal. One half dioptre of hypermetropic astigmatism in right eye, and one dioptre in left. Six degrees esophoria. Glasses did not influence attacks.

Examination. — Nov. 10, 1898. In morning, without food or drink since previous evening. One hour after, bread 30 gms.; water, 300 cc.; removed 35 cc.; contents not remarkable in appearance.

Free HCl (Phloroglucin-Vanillin), .12%.

Total acidity, .23%.

Examination, Dec. 15, 1898. — Patient had had anorexia three days and had a crisis nine days later. One and one-fourth hours after, bread, 30 gm.; water, 300 cc.; removed 120 cc. contents.

Free HCl (Topfer's reagent and tropeolin), .12%.

Total acidity, .27%.

Microscopic examination of sediment showed no blood or anything abnormal.

Examination, Dec. 27. — (Third day of crisis.) Patient had been drinking water and vomiting three days. One and one-half hours after, bread, 30 gm.; water, 300 cc.; removed 415 cc.; rather slimy contents.

Free HCl (Phloroglucin-Vanillin), .029%.

Total acidity, .09%.

No blood or sarcinæ in sediment.

CONCLUSIONS.

(1) In tabes gastric motor power and HCl and pepsin secretion are depressed more commonly than exalted.

(2) No degree of activity of these functions characterizes tabetics.

(3) In gastric crises of this series HCl secretion and motor power were more depressed than usual, and in the severe painful crises depression of acid secretion was extreme and continued for hours. In one case (C. H. P.) there was probably hypersecretion of gastric juice.

	Hyperchlorhydria, .2 per cent +.	Eichlorhydria, .1 — .2 per cent.	Hypochlorhydria, —.1 per cent.	Anachlorhydria.	Pepsin normal, 3-4 hours or —.	Pepsin diminished, 3-4 hours +.	Hypermotility.	Normal motility, less than 75 cc.	Hypomotility, 75 cc. +.	Hyperacidity, total .30 per cent +.	Normal acidity, .2 — .3 per cent.	Hypacidity, total (less than .20 per cent).	Succinic acid.	Lactic acid.	Number of tests.
M. J.	2	...	...	...	1	1	...	1	1	2	...	...	1	...	2
C. A. E.	...	1	1	...	...	1	...	2	...	...	2	...	...	2	2
W. L.	...	...	2	...	1	...	...	2	...	...	2	...	...	...	2
L. H.	...	...	2	2	...	2	...	1	1	...	...	2	...	1	2
L. C.	...	2	...	...	...	2	...	...	2	...	2	...	1	...	2
S. J. W.	...	...	3	...	...	2	...	...	3	...	3	1	...	...	3
J. J. C.	...	...	1	...	1	...	...	...	1	...	...	...	...	...	1
G. F. C.	...	1	...	...	1	...	...	1	1	...	1	...	...	...	1
W. F.	1	1	...	...	...	2	...	1	...	...	2	...	...	...	2
W. H. S.	...	1	...	...	...	...	...	...	...	...	1	...	...	...	1
J. J. B.	...	2	1	...	...	1	...	...	...	...	3	...	...	...	2
M. R.	...	...	3	3	...	2	...	2	1	...	...	2	...	...	3
W. H. A.	...	...	2	...	...	1	...	1	...	...	1	1	...	...	2
A. D.	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1
P. S.	...	1	...	...	...	...	...	1	...	...	1	...	1	...	1
G. L.	...	...	2	2	...	...	...	...	2	...	...	...	1	...	2
J. L.	...	...	2	...	...	...	...	...	...	...	...	2	2	...	2
W. J. G.	...	...	1	1	...	...	...	1	...	...	1	...	...	2	2
D. C.	...	...	7	...	1	...	...	4	3	...	1	4	7	...	7
C. H. P.	...	2	1	...	...	...	...	1	1	...	2	...	...	...	3
Mrs. M.	...	1	...	...	...	...	...	1	...	...	1	...	...	...	2
Totals	3	12	29	8	5	14	...	19	16	2	23	12	13	5	45

Reports of Societies.

AMERICAN CLIMATOLOGICAL ASSOCIATION.

REPORT OF THE TWENTY-SECOND ANNUAL MEETING OF THE AMERICAN CLIMATOLOGICAL ASSOCIATION HELD AT DETROIT, MICH., JUNE 29, 30, 1905.

DR. W. F. R. PHILLIPS, in his presidential address, referred to the homage man pays to climate notwithstanding he can live at any latitude and endure an extraordinary range of cold and heat. Deprived of the prevision that his intelligence gives him, man would be confined to narrow geographic regions and to still narrower climatic limits. The impress of climate can be traced in his art, architecture, literature, philosophy, religion and superstition. If climate impresses so profoundly man in health, why not equally so in disease? Dr. Phillips undertook to state the real position of climate in the therapeutics of tuberculosis. Empiricism is the foundation of knowledge, but scientific medicine is not satisfied with the best of empiricism. Definitions of climate were given. He showed that the sanatorium treatment must include climate, otherwise we exclude the air with its heat, its moisture, its motion, its pressure and the meteorological conditions which enforce themselves willingly or unwillingly upon all. The sanatorium treatment demands a life in the open atmosphere, more perfect in its details, more imperative in its implicit execution, than is enforced in any of the simple, so-called climatic health resorts or is observed in the ordinary home treatment. Dr. Phillips made a plea for more climatological laboratories. They should be placed at sea level and on the elevated plateaus of the Rocky Mountains. Such institutions, established by philanthropically inclined citizens, would be of inestimable value.

GEN. C. H. ALDEN, U. S. A., retired, presented a paper on

SOME SOUTHERN CALIFORNIA HEALTH RESORTS.

He reported the experience of eighteen months in Southern California. He agreed in the opinion of Otis that Southern California in the future will be visited not so exclusively by consumptives as heretofore, but by invalids from other causes, the aged and those simply wishing to escape a northern winter. With the exception of Idyllwild in the Strawberry Valley on San Jacinto Mountain, summer hotels in the mountains have not been developed in Southern California as they have been in eastern states. Resident Californians go chiefly to the seashore in summer, but it is too damp for many invalids. The interior towns are too hot in summer. The attitude of Southern Californians toward incoming tuberculous invalids has changed in recent years. Formerly such invalids brought in needed money and were welcome; now it is difficult for consumptives to obtain needed accommodations in hotels or boarding houses or by renting. The best resorts will not admit consumptives and so advertise. The residents of Southern California have a great burden thrown upon them in the care of a large number of destitute consumptives coming to their country and are meeting it generously. The Barlow Sanatorium at Los Angeles and the county hospitals are doing good work. The sanatoria at Monrovia, Loma Linda, Mentone and Altadena were referred to. Sanatorium treatment is the best for patients. The

author described Redlands, Mentone, Beaumont, Santa Barbara, Pasadena and the Ojai Valley Dr. Alden believes that while the mild temperature and continuous sunshine of this region are favorable to the aged and the feeble from many causes, needing an outdoor life, the warmth and moisture are unfavorable for pulmonary tuberculosis that is at all advanced. With plenty of funds and arrangements perfected in advance the invalid may come if he is so advised by competent medical authority and is placed under the care of a reputable physician. Redlands is advised for winter and the foothills near Pasadena or Santa Barbara for summer.

Dr. A. D. Blackader, of Montreal, read a paper on

THE CLIMATOLOGY OF THE LAWRENTIANS.

This range of mountains form the southern edge of a vast plateau of uneven character, extending from Labrador to the neighborhood of Lake Superior, and thence in a northeasterly direction nearly to the shores of the Arctic Ocean. After a description of its geology, topography, vegetation, animal life and climate, Dr. Blackader showed the advantages of this region for patients in the early stages of tuberculosis. Except for the very weak and emaciated the extreme cold is no bar to comfort, and, in many cases, appears to aid the restorative process. During the few weeks required for the breaking up of the ice in the rivers and the melting of the snow, changes in the temperature are frequently rapid and extreme, and the air is more than usually moisture laden. But after the middle of May the woods and the ground are generally dry, the air is balmy and the climate is in every way suitable for an out-of-door life. The innumerable black flies and mosquitoes which abound in this region during June and the first week in July are a drawback. August and September are the best months for patients. The country offers much to the sportsman. The first snow fall occurs about Nov. 15 and lies in an unbroken covering from 18 to 36 in. deep until the end of March. Tornadoes are unknown; blizzards are rare; and high winds seldom occur in winter. About 50 in. of snow and 21 in. of rain constitute the average precipitation. A description was given of Ste. Agathe and views of Lac Tremblant and other localities were shown, with full meteorological tables.

Dr. Thomas D. Coleman, of Augusta, Ga., read a paper on

NORTH AUGUSTA, S. C., AS A WINTER HEALTH RESORT.

This place, while not a town or even a village, is a southern resort of prominence and is practically a suburb of Augusta, Ga. It is located on a crest of a row of sand hills which begin at Chester, S. C., and pass through Aiken, thence to Georgia. North Augusta has an altitude of about 400 to 500 ft. above Augusta, which is 167 ft. above tide. The country is rolling, sandy, abounding in pines and oaks wherever uncultivated. The water supply is from several large springs. Dr. Coleman described the Hampton Terrace Hotel, its equipment and opportunities for out-of-door amusement. Climatic statistics were given from which it appears to afford an ideal place for those convalescing from acute diseases or for those suffering from throat and chest affections, Bright's disease, heart disease and general debility.

Dr. DeLancey Rochester, of Buffalo, said that these descriptions are exceedingly interesting to men from the north. He had sent a patient last winter to a southern resort and he reported that there was absolutely nothing there at all except a few pinetrees, and a golf club; and if a person didn't play golf, there wasn't a single thing to do. There were no pretty drives although advertised, and he simply had to sit still, as he was not in a condition to go traveling about to find a better place. While he had a very good hotel he had absolutely nothing to do except to talk to people around who cared to talk to him, mostly the golf people, and it was to him very lonesome.

Dr. R. H. Babcock, Chicago, inquired whether in the last few years conditions appear to have changed at all in the locality referred to. Whether the fluctuations in temperature have become very frequent or sudden, and whether there has been more snow or more rainfall than in the years earlier. He had an impression that the denudation of the great pine forests of the south is working a decided change for the worse in climatic conditions.

Dr. Thomas D. Coleman, Augusta, Ga.: Golf is now a fad with many people. The golf club at North Augusta is maintained all the year, and Augusta people play golf a great deal. And the majority of the people who come there play golf. They play it all winter, and people who think they are too old seem to enjoy it immensely, after fairly initiated into it. There are certain people who don't play it, and as to other amusements there are tennis courts. Our roads are made on a natural formation of red clay sand and pebbles, and packs down like asphalt. It does not get very wet, and it does not cut up in wet weather, and it does not become dusty in dry weather. In a dozen different directions you get these beautiful drives, and automobiling, bicycling and even walking are good. The drives on the Carolina side are not yet in as good condition. There is in contemplation now, in addition to these drives, a broad auto-boulevard from Augusta to Aiken. The proximity to Augusta makes it accessible to all sorts of amusements. Augusta is a place of fifty thousand. It has libraries, schools and theatres where people may go for amusement. As to any change of climate, it is perhaps a little colder than formerly. But the tables do not show any very great variation in the temperature. As to snow, we had no snow at all last year, and we rarely see it snowing. I have seen it sufficiently deep for sleighing only twice in my life. Once when the orange groves froze up in Florida. But we do have occasional snow falls which last for a few hours.

Dr. E. L. Shurly, of Detroit, read a paper on

SOUTHERN FLORIDA FOR CHRONIC CARDIAC AND VASCULAR DISEASE.

He called attention to the fact that the complex functions of the skin, its emunctory and heat radiating functions especially, have, both in health and disease, a signally direct relation or coaptation to the circulatory and renal functions so that all the attendant phenomena in the regulation of blood pressure may be intimately connected with the function of the skin. Cases showing more than full compensatory hypertrophy, with more or less condensation or loss of elasticity of the arterial intima or walls, whether accompanied by severe or moderate renal lesion, find relief and often restoration to a condition of ease and usefulness by a residence in subtropical regions. For these cases southern Florida, including the islands known as the Keys and the West Indies, are suitable localities. No latitude north of Palm Beach, in winter, is to be recommended.

Dr. Shurly believes that the cutaneous capillary circulation is at once altered and the dilatation of the surface vessels, the chemical action of the sun's rays and the reduction of blood pressure are the favorable features. The humidity is only a slight disadvantage. The diet should be non-nitrogenous and non-stimulating, especially in the South. The patient, if not too highly educated in the literature of the dehumanized

nostrum venders, can regulate his regimen and daily activities for himself and needs but little medical management.

DR. C. C. RANSOM, of New York City, presented a paper on the

INFLUENCE OF CLIMATE ON GOUT.

He discussed the geographical distribution of gout. In Europe it is very common in Germany, especially in Bavaria and Suavia where beer drinking is excessive. It is common in Belgium, France and England; less frequent in Scotland and Ireland and in Sweden and Norway. The Mohammedans of India suffer from it, but not the Hindoos. Dr. Ransom holds that it is very common in the United States and Canada although this view is not held by the profession generally. While the warm, dry countries with equable climate seem most favorable to patients suffering from gout there are striking exceptions in the immunity of Iceland, Falkland and the Faröe Islands; while along the dry and warm coast of Chili the disease is very frequent.

Gout being a dyscrasia of metabolism, any sudden climatic change, especially when accompanied by dampness, would, by lowering the vitality, increase a predisposition to abnormal metabolism, but we have no evidence that a high or low temperature or dry or humid temperature has, without such changes, any deleterious effect.

The notion that the humid atmosphere of the seashore, by retarding elimination and thus favoring the retention of uric acid, will increase gout, has for many years been given as the principal reason for keeping patients from these places. Our present knowledge of the innocuousness of uric acid in gout, the author holds, at once does away with this objection and it may be questioned if the seashore is really bad for these cases. During the past few years he has sent many patients to seashore places following a course of treatment at the springs and has found no deleterious effects following. Neither has he seen any special effect upon the course of the disease during the wet, rainy weather which has been so prevalent during the past two seasons. Considerable latitude may be allowed in the selection of a climate for gouty subjects.

DR. F. M. POTTENGER, of Monrovia and Los Angeles, Cal., presented a paper on

THE PERMANENCY OF RESULTS IN PULMONARY TUBERCULOSIS, WITH THE AFTER HISTORY OF TWENTY-SEVEN CASES TREATED BY THE COMBINED HYGIENIC, DIETETIC, OPEN AIR AND TUBERCULIN TREATMENT.

The question that interests us is the permanent result; it depends largely on the earliness or lateness of the treatment. Many, although treated early, relapse because the treatment was not sufficiently thorough. This is illustrated by the statistics of the sanatoria of the German Imperial Insurance Office which show that for five years after discharge there was a rapid diminution in the percentage of those able to work. Dr. Pottenger reviewed the statistics from Hohenhonnef, Sharon, Mass., the Adirondack Cottage Sanatorium and German Insurance Companies, and then gave the data regarding 27 cases which he had treated between 1899 and 1903. Of these 12 were apparently cured at the time of the present report; 8 more were placed in the "arrested" class; these 20 are all living, enjoying good health and are engaged in the active duties of life. In no instance has there been a relapse although six years have elapsed since the first one was discharged and twenty-six months since the last. Dr. Pottenger terms those patients cured who have been apparently cured for one or two years and show no clinical symptoms of physical signs beyond those dependent on the permanent changes caused in the lung and which fail to react to tuberculin.

(To be continued.)

Recent Literature.

A Memoir of Dr. James Jackson, with sketches of his father, Hon. Jonathan Jackson, and his brothers, Robert, Henry, Charles and Patrick Tracy Jackson; and some account of their ancestry. By JAMES JACKSON PUTNAM, M.D. Boston and New York: Houghton, Mifflin & Co., 1905.

This book is a very pleasing and interesting contribution to our knowledge of New England life from the settlement of Massachusetts in the early part of the seventeenth century on, as exemplified in the records of one family, and of a useful and distinguished member of that family, whose long and honorable career came to an end in the year 1867. It is really more than a memoir of Dr. James Jackson; the general reader will find its simple and unvarnished records, skillfully put together, quite as attractive as will those more especially interested in the professional matters with which it deals.

The two sons, John and Edward, of a plain but substantial London citizen came to the infant Massachusetts Bay Colony in 1635 and 1643 respectively and settled in Cambridge. From Edward, who was a deputy to the General Court when John Winthrop was governor, descended through four generations of busy, active, influential, public spirited men the subject of this memoir. His predecessors became connected by marriage with many of the most trusted and respected families and were serviceable in various walks of life to the colony and to the Commonwealth of Massachusetts.

In his own generation there were five brothers, two of whom, Robert and Henry, followed the sea in those adventurous days; one, Charles, became a judge of the Massachusetts Supreme Court and one of the ablest lawyers of his day; and the fourth, Patrick, became an eminent merchant and was largely instrumental in developing the first cotton manufactories of Massachusetts.

Dr. Putnam's book, an octavo of 450 odd pages, with ten photogravure portraits and sixteen half-tone cuts, is divided into two parts, the first part, of 156 pages, is devoted to other members of the family, and the second part, of 300 pages, concerns itself with Dr. James Jackson particularly. After studying for his profession at home, Dr. Jackson spent nearly a year in London and returned to practice in Boston in October, 1800, in time to take part in the popularization of vaccination against smallpox. He achieved an early success as a practitioner and his reputation steadily grew and increased with his years. He was not only a sound, a

trusted, a successful practitioner, but an eminently wise man. His professional life covered the period of the reorganization of the Massachusetts Medical Society in its youth, the founding of the Massachusetts General Hospital, the early development of the Harvard Medical School in Boston, in all of which important movements he played a leading part, and extended down to the sixties of the last century.

To most medical men of middle life in this neighborhood it is unnecessary to say more about Dr. James Jackson; but to them, to those of a younger generation and to the laity in general, we warmly commend Dr. James Jackson Putnam's delightful memoir of his grandfather.

A Text-Book of Physiology, Normal and Pathological. By W. S. HALL, Professor of Physiology, Northwestern University Medical School. Philadelphia and New York: Lea Brothers & Co. 1905.

It will be noticed that this new second edition of Professor Hall's text-book treats of physiology "normal and pathological." The most notable changes since the first edition are seen in the additional sub-chapters dealing with the pathological or clinical physiology of the circulation, blood, respiration, digestion, metabolism and excretion. The clinical aspects of disturbances of normal function in the special senses and the central nervous system are considered in connection with the normal functioning. By learning the disturbances of function at the same time with normal functioning, students not only have light shed on the normal, but also get an insight into the processes which constitute disease. Another feature of the book which will be attractive to some minds is the frequent orderly summarizing of the subject-matter in classified outlines.

A Text-Book of the Practice of Medicine. By JAMES M. ANDERS, M.D., Ph.D., LL.D., Professor of Medicine and of Clinical Medicine at the Medico Chirurgical College, Philadelphia. Seventh edition, revised and enlarged. Octavo of 1,297 pages, fully illustrated. Philadelphia and London: W. B. Saunders & Co. 1905.

The seventh edition of Anders' "Practice of Medicine" and the sixth edition of Osler's appear almost simultaneously. The first edition of Anders' work appeared in 1897; the first edition of Osler's in 1892. They have both been very popular and successful books. Anders' book is somewhat the more bulky and voluminous, and on the other hand, we should say that Osler's is the more concise.

The present and last edition of Anders' Practice has been revised, extended and added to, wherever changes and progress in theory or practice indicated such action. The reader can consult the book with the confidence of finding what he seeks presented in a reliable form exhibiting the most recent knowledge as well as the accepted wisdom of the past.

Studies in the Psychology of Sex. Sexual Selection in Man. I. Touch. II. Smell. III. Hearing. IV. Vision. By HAVELOCK ELLIS. Philadelphia: F. A. Davis Company, Publishers. 1905.

In this volume the author attempts a psychological explanation of sexual love by an appeal to the senses of touch, smell, hearing and vision. To accomplish his end he has read widely and delved deeply into that part of human life which is ordinarily little discussed. That his work is of service cannot be questioned; it is merely regrettable that one is called upon to read so many pages of unpleasantness to reach the desired end. It would be altogether unfortunate were the book to fall into the hands of the young and inexperienced. Admitting this, it is at once to be acknowledged that the volume contains many facts of much psychological and medical interest, told in a succinct and entertaining fashion, with many references to authorities. The author makes no claim to finality, but regards his work as tentative and preliminary. The main attempt is to place the doctrine of sexual selection on a firm basis by eliminating the doubtful esthetic element. The aim is scientific, but it is exceedingly doubtful of accomplishment, either at the hands of the author of this book or of others who may follow him along similar lines of research.

Under Appendix B are published histories of sexual development, which add nothing to the value of the book. These histories, set forth in minutest detail, are disgusting, and distinctly detract from the character of the book, as an attempt at a scholarly presentation of a subject which demands the utmost delicacy of treatment.

The Practical Medicine Series of Year Books. Comprising ten volumes on the year's progress in medicine and surgery. Issued monthly. Under the general editorial charge of GUSTAVUS P. HEAD, M.D., Professor of Laryngology and Rhinology, Chicago Post-Graduate Medical School. Vol. II.

General Surgery. Edited by JOHN B. MURPHY, M.D., Professor of Surgery, Northwestern University Medical School. Series 1905. Chicago: The Year Book Publishers.

The precise value of year books has never been entirely clear to us. They are certainly convenient as reference books but obviously must be made up from selected subjects which, in the opinion of the editor, are important. The editor says that he has reproduced extensively a number of articles which treat in an analytical or statistical manner of the pathology or operations of an organ, or sets of organs, based usually on an enormous or extraordinary experience of an individual which was sufficient to make his statements authoritative. The result is that he has compiled a book that is an excellent epitome of the progress of surgery on selected subjects. Dr. Murphy has added a perspective to the work, and his introduction and editorial comments are excellent.

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THE DISMISSAL OF DR. V. Y. BOWDITCH FROM THE RUTLAND SANATORIUM.

THE announcement that Dr. Vincent Y. Bowditch has been dismissed from his position as visiting physician to the State Sanatorium for Tuberculosis at Rutland, Mass., will be received with astonishment by the entire medical profession. Dr. Bowditch's pioneer work in the treatment of tuberculosis by rational methods and his interest in the development of the Rutland Sanatorium are too well known to need reiteration here. The series of circumstances which have finally led to his dismissal discloses a state of affairs in the management of the institution, which we have no intention of discussing at length, but which appears to furnish another example of the failure of a mixed board of trustees to meet the highest demands of their position.

As at other hospitals, there is a resident medical superintendent at the Rutland institution, whose duties have always been purely administrative. It has, however, for some time been the desire of certain members of the board of trustees that the superintendent's duties should be extended and that he should have medical control. To this Dr. Bowditch and the medical members of the board of trustees have objected, until a properly trained man could be found to take the added responsibility. Since this had not yet been done, it was maintained that the good of the institution demanded that the yearly reports be signed only by those physicians who held an acknowledged place as experts before the community.

Apart from details the principle involved in this attitude on the part of Dr. Bowditch and a minority of the trustees is clear and perfectly sound. The work of an institution must stand, in the public eye, through the character or the indorsement it receives. If its reports be signed by men not directly concerned with the matters reported on, whose reputations are not yet formed, or whose attainments do not place them in the category of experts, the standing of the institution must inevitably suffer. If, on the other hand, the names which appear represent acknowledged expert opinion, public confidence is enlisted and the development of the institution is assured. In this case, Dr. Bowditch and those who stood with him were holding out for an elevation of standard, and their opponents for the converse. Of this there can be no question and upon this point, very naturally, a difference of opinion developed which resulted in Dr. Bowditch's summary dismissal by a majority vote of the trustees.

The details of this action do not concern us, but the outcome and its significance are matters of much public and professional concern. If a man after such service as Dr. Bowditch has rendered is to be dismissed without a hearing by a board of trustees, most of whose members are ignorant or careless of the full significance of the issues at stake, it forebodes ill for the development of our institutions and for the fair treatment of our public-spirited physicians. Unjust and impolitic as it may be, Dr. Bowditch's dismissal is no doubt final and must be accepted. It is, however, the manifest duty of the profession at large to protest against the methods which make such arbitrary action possible. At such times physicians should be absolutely united in their attitude and firm in their expressions of disapprobation. It is, therefore, with much regret that we record the fact that Dr. E. O. Otis has accepted the position from which Dr. Bowditch has been dismissed.

A CONCEPTION OF DISEASE.

UNDER this heading Sir Frederick Treves has recently delivered an address before the Philosophical Institution of Edinburgh. The discussion is of interest, though not, we venture to suggest, a settlement of the thesis which he had set himself to prove. It is maintained that the popular conception of disease as of something malignant, evil in origin, in intent and in effect, is wrong, and that, if our investigation be carried far enough, it will appear that the phenomena of disease are marked by a purpose and that that purpose is

beneficent. Mr. Treves says, "I shall hope to demonstrate that the processes of disease are aimed not at the destruction of life, but at the saving of it, and that its manifestations are the outcome of a natural effort towards cure."

To establish this proposition Mr. Treves quotes examples which, however, are pitifully few in proportion to the number of diseases to which flesh is heir. The example to which he attaches greatest importance is included under the general conception of inflammation. In an entertaining and semi-popular fashion a vivid picture is drawn of the combat between the leucocytes and the invading irritant. Inflammation is regarded as a protective agency, and incidentally a tribute is paid to the "humble poultice, the secret encourager of inflammation." All this must be accepted as true and also, we believe, not original with Mr. Treves. We question, however, whether the matter has ever been stated in such radical and picturesque language. For example, it is stated that "peritonitis has always been spoken of as the operating surgeon's deadliest enemy; it is in reality his best friend." And again, "peritonitis is indeed never a calamity for it is never other than a process of cure." This example is further amplified by a reference to certain infectious diseases. Speaking of the ordinary cold, the remark is made, "he who grumbles about his cold is finding fault with a measure of relief to which he owes his life." It is hardly necessary to follow the argument further. Examples are multiplied which go to show that bodily activities, misnamed the symptoms of disease, are in last analysis beneficent.

Difficulty, however, is naturally met, as Mr. Treves himself admits, when we approach that "large series of disorders whose secrets have not yet been fathomed." Mr. Treves is content to wait until this work is accomplished before admitting that his theory is wrong. Naturally the crux of the entire situation lies just here. A few processes we know and can best explain as protective. From this meagre knowledge, however, few would venture to generalize as Mr. Treves has done, and claim that all disease is beneficent. However optimistic we may be in our conception of ultimate causes, it is hard and we believe well nigh impossible to regard the evils of life, which we include under the comprehensive term "disease," as beneficent, except in a purely metaphysical sense. A vast array of degenerative processes and of congenital defects, together with the innumerable results of excesses of various sorts, which we ordinarily classify as disease, cannot by any stretch, either of reason or imagination, be regarded as protective of the individual, whatever their effect upon the race at large may be. Mr. Treves' discussion is at best inconclusive; the arguments are too meagre to permit of an application of his theory which is in any sense universal.

MEDICAL NOTES.

In Memory of Theodor Schwann. — It is reported that a memorial is to be erected at Reuss in memory of Professor Schwann, the originator of the cell theory as applied to organic structure. It is hoped to raise the sum of $5,000 of which about one half is already in hand.

International Medical Congress. — A preliminary program of the tours of the American party attending the Fifteenth International Medical Congress, to be held in Lisbon in April, 1906, has been published. Two general tours have been thus far outlined, including visits to various points of interest in the journey to Lisbon. Those who desire to present papers at this meeting should address Dr. Ramon Guiteras, 75 West 55th Street, New York City.

Prize on Etiology of Epilepsy. — At the fifth annual meeting of the National Association for the Study of Epilepsy held in the Academy of Medicine, New York City, on Nov. 29, last, Dr. W. P. Spratling, president, announced that the association offered a prize of $300 for the best essay on the "Etiology of Epilepsy." Physicians in any country may compete for this prize. The award will be made in November, 1906, but all essays submitted must be sent in by Sept. 1 of that year. Details as to conditions governing the award may be obtained from Dr. Spratling, superintendent of the Craig Colony for Epileptics, Sonyea, Livingston County, N. Y.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, Dec. 6, 1905, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 42, scarlatina 17, typhoid fever 28, measles 112, tuberculosis 34, smallpox 0.

The death-rate of the reported deaths for the week ending Dec. 6, 1905, was 18.88.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, Dec. 2, 1905,

was 181, against 230 the corresponding week of last year, showing a decrease of 49 deaths and making the death-rate for the week 15.03. Of this number 98 were males and 83 were females; 179 were white and 2 colored; 107 were born in the United States, 73 in foreign countries and 1 unknown; 34 were of American parentage, 132 of foreign parentage and 15 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 38 cases and 2 deaths; scarlatina, 31 cases and no deaths; typhoid fever, 15 cases and 1 death; measles, 119 cases and 1 death; tuberculosis, 36 cases and 23 deaths; smallpox, no cases and no deaths. The deaths from pneumonia were 33, whooping cough 0, heart disease 15, bronchitis 8 and marasmus 5. There were 12 deaths from violent causes. The number of children who died under one year was 27; the number under five years, 44. The number of persons who died over sixty years of age was 45. The deaths in public institutions were 59.

There were 2 cases and 3 deaths reported from cerebrospinal meningitis during the week.

A FAITHFUL TRUSTEE. — Mr. Henry H. Sprague, whose connection with the Boston City Hospital has been unceremoniously terminated by the appointment of a successor, served that institution as a trustee for twenty-eight consecutive years and for several additional years previous to a brief interval of one year. He was by much the oldest trustee on the Hospital Board, and in all rendered the institution more than thirty years of faithful service. That implies a knowledge of methods, of plans, of traditions, of changes and of needs which it is hard to replace on such a governing board. There are few municipal hospitals which can be compared with the City Hospital of Boston at the present time. We know of none which excel it. A great responsibility will rest upon the shoulders of new trustees if this prestige is to be sustained.

NEW YORK.

BEQUEST TO HOSPITAL ASSOCIATION. — Of $20,000 left in public bequests by the late Albert J. Pitkin of New York the sum of $5,000 goes to the Hospital Association of the City of Schenectady.

THUMB IMPRINT SYSTEM OF IDENTIFYING CRIMINALS. — Police Commissioner McAdoo has determined to introduce in his department, as an addition to the Bertillon measurement system, the thumb imprint system of identifying criminals which is now in vogue in France. Accordingly Detective Sergeant Joseph Faurot, who is an expert in the Bertillon system and has charge of the measurements at police headquarters, is to be sent abroad for two months to study the imprint system, and on his return will instruct others of the detective bureau in its use.

HOME FOR CRIPPLED CHILDREN. — Five thousand dollars each has been contributed by Jacob H. Schiff and Mrs. Henry Goldman towards a fund to build a permanent modern home for the Crippled Children's East Side Free School.

PUBLIC SCHOOLS ATHLETIC LEAGUE.—A girls' branch of the Public Schools Athletic League was organized by a number of philanthropic women on Nov. 28. The very marked success of the methods adopted two years ago, when a broader and more definite plan of athletic training for the boys of the New York public schools was put in operation, has shown the need of doing something on similar lines for the girls of the schools. A prize of $50 was offered by Mrs. Henry Siegel for the best plan of operation, and one of the addresses on this occasion was made by Dr. Luther Gulick, Director of Physical Training in the New York Public Schools.

CHILDREN'S AID SOCIETY. — The annual meeting of the Children's Aid Society was held on Nov. 28. The secretary's report showed that 1,400 patients have been treated by the Sick Children's Mission. Last summer the expenditures of the fresh-air fund amounted to $29,658. In three of the schools of the society the classes are attended by two hundred crippled children living in tenement houses, who are conveyed to and from schools in wagonettes. There is need of a fund in support of trade classes for homeless boys at the Farm School. The number of beds at the school now amounts to ninety, and none of them ever lacks an occupant. During the year the extensive and admirable work of the society in other directions has been carried on and enlarged, and the total expenditure was nearly $575,000.

TUBERCULOSIS EXHIBITION. — The Tuberculosis Exhibition at the American Museum of Natural History has excited much interest, and the various public meetings held in connection with it, as well as the exhibition itself, have been well attended. In the course of his address on the opening night, Health Commissioner Darlington said that 95% of the cases of pulmonary

tuberculosis are now reported, whereas formerly the department had to search for them. He also stated that of late 8% of patients in the last stages of the disease had recovered, while 60% of the lighter cases were enabled to return to their work. At the meeting for the trades on Nov. 29, Dr. Darlington, who presided, referred to the fact that 2,200 workingmen of Hartford had contributed $10,000 toward a fund for preventing the spread of tuberculosis in that city, showing the deep interest they felt in the matter. Professor Farrer stated that the most important development in regard to the prevention of the disease was the fact that 2,500,000 workingmen had promised their co-operation. A circular of facts and statistics about consumption has been approved by the committee on sanitation of the Central Federated Union of New York, and is to be sent out to the various unions for distribution.

National Association for the Study of Epilepsy. — The fifth annual meeting of the National Association for the Study of Epilepsy and the Care and Treatment of Epileptics was held at the New York Academy of Medicine on the afternoon and evening of Nov. 29. In the course of his address the president, Dr. W. P. Spratling, of the Craig Colony at Sonyea, said: "Clinically, we have learned much in the last twelve years; but when we come to the final analysis of our knowledge, we are still groping in darkness. While certain causes for epilepsy are recognized, there are many cases in which the cause is as yet undiscoverable. In the course of time, with patience and continuous study, the innermost problem of this terrible disease must be solved. There are so many types of the affection that it is better to term them epilepsies for the purposes of classification. The colonies which have been established all over the United States have brought about a great improvement in the treatment of epileptics. In former days the only method of treatment was to dose the unfortunate victims with bromide until they were saturated with the drug, and keep them confined in insane asylums, prisons and poorhouses. Those times are now past, and epileptics are looked after in the same way as other sick persons. A right mode of living frequently secures immunity from seizures, and 25% of the cases are cured." During the meeting interesting reports were presented by physicians from all over the country, showing the progress which had been made in the care of epileptics in their respective states.

Miscellany.

THE OXFORD MEDICAL SCHOOL.

On Nov. 16, the Oxford Medical Graduates' Club entertained a number of guests at dinner at the Trocadero Restaurant, London. Professor Osler, who was in the chair, after congratulating the club upon its success and upon the large number — some one hundred and fifty — present at the dinner, spoke in glowing terms of the many excellencies which he found in the undergraduates at present prosecuting their preliminary medical studies in Oxford. He praised the laboratories of anatomy, physiology and pathology, but said that the school needed laboratories of pharmacology and hygiene. He did not think it advisable to attempt to create a school of clinical medicine, but he had commenced to give clinical instruction, and hoped that all Oxford men coming up for clinical work in London would be sufficiently trained to take immediate advantage of the facilities there afforded. The Vice-Chancellor, Dr. Merry, rector of Lincoln College, said that the action of the medical graduates in raising a fund for the endowment of a chair of pathology had been highly appreciated in Oxford, as was also the generosity of Mr. Edward Whitley, B.A., of Trinity College, who had not only given a special donation of £1,000, but had also promised to double any sum raised by the medical graduates. Sir William Church subsequently said that the fund now amounted to £2,168. — *British Medical Journal.*

MEMORIAL: DR. JAMES R. CHADWICK.

The Obstetrical Society of Boston, at the meeting held Nov. 28, 1905, voted that the following memorial resolutions be published in the Boston Medical and Surgical Journal:

"Dr. Chadwick was an active member of this Society for many years and contributed largely by papers and discussions to its work. He was its president from 1895 to 1897. An active gynecologist, he was mainly instrumental in forming the American Gynecological Society of which he was for several years secretary. The carefully prepared volumes of its transactions were largely due to him. He was one of the founders of the Boston Medical Library and labored incessantly and successfully for twenty-five years in its behalf. It is his noble monument and will carry his name with love and gratitude to generations of his own profession. His work in establishing the Cremation Society need not be commented upon here, but showed the widespread interest he took in matters affecting public health. To the older members of this Society his loss comes as the loss of a brother much beloved. A genial, kindly, courteous gentleman, an affable and hospitable host, the members of this Society will long cherish pleasant memories of a dear friend and comrade — James Read Chadwick."

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, NOV. 25, 1905.

CITIES.	Population.*	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diphtheria and croup.	Typhoid Fever.	Diarrheal Diseases.
New York . .	3,908,644	1,295	309	22.08	19.77	2.59	.69	2.85
Chicago . . .	1,990,750	471	100	21.65	15.50	1.70	.85	5.31
Philadelphia	1,407,968	472	109	18.64	18.84	2.75	2.33	2.96
St. Louis . .	633,606	—	—	—	—	—	—	—
Baltimore . .	542,229	220	57	22.27	15.00	.45	3.63	.91
Cleveland . .	444,251	—	—	—	—	—	—	—
Buffalo . . .	400,645	—	—	—	—	—	—	—
Pittsburg . .	362,403	—	—	—	—	—	—	—
Cincinnati . .	338,377	—	—	—	—	—	—	—
Milwaukee .	325,990	—	—	—	—	—	—	—
Washington .	300,776	—	—	—	—	—	—	—
Providence .	196,744	62	11	19.35	11.29	1.61	—	—
Boston . . .	593,598	215	57	19.53	12.91	.93	1.25	1.67
Worcester . .	127,963	39	14	2.56	15.38	—	—	2.56
Fall River . .	105,697	27	10	33.33	11.11	3.70	—	11.11
Cambridge .	97,426	32	10	18.75	37.50	3.13	6.25	3.13
Lowell . . .	94,845	39	15	12.82	20.51	2.56	—	2.56
Lynn	77,025	23	—	21.74	—	4.35	4.35	—
New Bedford	74,821	28	10	10.71	21.43	10.71	—	—
Springfield	73,484	13	4	23.08	7.69	—	—	7.69
Lawrence . .	69,939	23	7	21.74	13.04	—	4.35	4.35
Somerville .	68,188	26	4	11.54	19.23	—	3.85	3.85
Holyoke . . .	49,124	12	7	—	23.08	—	—	—
Brockton . .	47,782	13	3	25.00	—	—	—	—
Malden . . .	37,990	12	3	25.00	8.33	—	—	—
Haverhill . .	37,818	11	2	36.36	9.09	9.09	9.09	—
Salem	37,586	10	1	40.00	—	10.00	—	—
Chelsea . . .	37,277	14	1	14.29	14.29	—	—	—
Newton . . .	36,694	11	—	—	—	—	—	—
Fitchburg . .	33,017	8	2	12.50	12.50	—	—	—
Taunton . . .	30,932	17	—	11.76	17.65	—	—	—
Everett . . .	29,108	3	—	—	—	—	—	—
Quincy . . .	28,067	2	1	50.00	—	—	—	—
Waltham . .	26,239	8	—	12.50	25.00	—	—	—
Gloucester .	26,008	—	—	—	—	—	—	—
Pittsfield . .	25,000	9	1	11.11	—	—	—	—
Brookline . .	23,424	6	—	—	—	—	—	—
North Adams	22,125	5	0	—	40.00	—	—	—
Chicopee . .	20,187	3	0	100.00	—	33.33	—	—
Northampton	19,942	5	0	40.00	—	20.00	—	—
Medford . . .	19,038	4	2	—	—	—	—	—
Beverly . . .	15,222	5	1	—	—	—	—	—
Newburyport	14,673	8	0	12.50	12.50	—	—	—
Hyde Park .	14,492	5	0	—	—	—	—	—
Woburn . . .	14,401	9	—	—	22.22	—	—	—
Melrose . . .	14,294	—	—	—	—	—	—	—
Leominster .	14,290	—	—	—	—	—	—	—
Marlboro . .	14,072	1	0	—	100.00	—	—	—
Westfield . .	13,609	5	—	—	—	—	—	—
Clinton . . .	13,105	4	0	—	—	—	—	—
Peabody . .	13,097	—	—	—	—	—	—	—
Attleboro . .	12,792	—	—	—	—	—	—	—
Revere . . .	12,647	2	—	—	50.00	—	—	—
Adams . . .	12,482	—	—	—	—	—	—	—
Milford . . .	12,105	—	—	—	—	—	—	—
Gardner . . .	11,981	—	—	—	—	—	—	—
Weymouth .	11,585	3	1	—	—	—	—	—
Framingham .	11,549	—	—	—	—	—	—	—
Watertown .	11,302	—	—	—	—	—	—	—
Plymouth . .	11,118	—	—	—	—	—	—	—
Southbridge .	10,947	4	1	25.00	—	25.00	—	—
Wakefield . .	—	—	—	—	—	—	—	—

* As last reported.

Deaths reported, 3,184; under five years of age, 744; principal infectious diseases (smallpox, measles, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption), 648; acute lung diseases 535, consumption 367, scarlet fever 16, whooping cough 8, cerebrospinal meningitis 14, smallpox 0, erysipelas 9, puerperal fever 18, measles 13, typhoid fever 41, diarrheal diseases 91, diphtheria and croup 69.

From whooping cough, New York 3, Chicago 1, Baltimore 1, Boston 2, Lowell 1. From scarlet fever, New York 11, Chicago 1, Philadelphia 2, Providence 1, Boston 1. From cerebrospinal meningitis, New York 8, Philadelphia, 1, Baltimore 1, Providence 1, Boston 1, Lawrence 1. Brockton 1. From erysipelas, New York 1, Chicago 1, Philadelphia 3, Baltimore 2, Boston 1, Springfield 1. From typhoid fever, New York 9, Chicago 4, Philadelphia 11, Baltimore 8, Boston 3, Cambridge 2, Lynn, Lawrence, Somerville and Haverhill 1 each. From measles, New York 11, Boston 2. From diphtheria and croup, New York 31, Chicago 8, Philadelphia 13, Baltimore 1, Providence 1, Boston 2, New Bedford 3, Fall River, Lowell, Cambridge, Lynn, Haverhill, Salem, Quincy, Chicopee, Northampton and Southbridge 1 each.

In the seventy-six great towns of England and Wales, with an estimated population of 15,609,377, for the week ending Nov. 18, 1905, the death-rate was 15.5. Deaths reported 4,641; acute diseases of the respiratory organs (London) 188, whooping cough 49, diphtheria 61, measles 107, smallpox 0, scarlet fever 45.

The death-rate ranged from 4.7 in Hastings to 30.7 in Bootle; London 17.3, West Ham 15.6, Brighton 8.6, Southampton 10.9, Plymouth 15.3, Bristol 12.7, Birmingham 14.4, Leicester 12.1, Nottingham 13.3, Birkenhead 16.6, Liverpool 19.7, Wigan 15.1, Bolton 16.7, Manchester 17.8, Salford 15.1, Halifax 11.5, Bradford 15.8, Leeds 16.6, Hull 8.7, Sheffield 14.8, Newcastle-on-Tyne 18.1, Cardiff 12.5, Rhondda 12.9, Merthyr Tydfil 15.5, Hornsey 8.1.

METEOROLOGICAL RECORD.

For the week ending Nov. 25, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

DATE	Barometer.	Thermometer.			Relative humidity.			Direction of wind.		Velocity of wind.		Weather*		Rainfall in inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A.M.	8.00 P.M.	Daily mean.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	
S. 19	30.12	35	42	28	66	38	52	W	N	10	9	C.	C.	0
M. 20	30.40	30	38	23	60	34	47	N	N	12	10	C.	C.	0
T. 21	30.52	40	50	29	51	45	48	N W	N W	10	12	C.	C.	0
W. 22	30.32	44	54	34	31	38	34	W	S W	14	8	F.	O.	0
T. 23	30.17	50	59	42	35	45	40	W	W	10	11	O.	C.	0
F. 24	30.03	56	64	48	48	57	52	S W	S W	9	15	F.	C.	.02
S. 25	29.86	52	63	42	77	60	68	S W	N W	15	12	O.	C.	0
☞	30.20		53	35			49							.02

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Means for the week.

SOCIETY NOTICE.

NEW ENGLAND HOSPITAL MEDICAL SOCIETY. — The regular meeting of the New England Hospital Medical Society will be held Thursday, Dec. 14, 1905, at 7.30 P.M., at Hotel Nottingham. Section of Gynecological Surgery. Reports of cases will be made.

BLANCHE A. DENIG, M.D., *Secretary.*

RECENT DEATHS.

MICHAEL EDWARD SCANNELL, M.D., M.M.S.S., died in Worcester, Nov. 16, 1905, aged forty-one years.

DR. AMBROSE LOOMIS RANNEY, of New York, died suddenly from cardiac disease on Dec. 2. He was born in Hardwick, Mass., in 1848, and was the last of six brothers, all of whom were practicing physicians in New York City. He was graduated from Dartmouth College in 1868, and from the medical department of the University of the City of New York in 1870. For a number of years he was a teacher of anatomy and neurology, and in practice he was a specialist in diseases of the nervous system. He was prominent as an advocate of cutting the ocular muscles for the cure of many nervous ailments, and had some noted controversies with his confrères on account of the claims which he made for this mode of treatment. Dr. Ranney was an expert at billiards, and was known to billiardists throughout the country. He had for years worked in the interest of elevating amateur billiards, and it was due to his efforts that the national championships were fostered by the Manhattan Athletic Club, of which he was a leading member.

DR. CLARENCE W. BARTOW, an interne of Roosevelt Hospital, New York, while substituting as ambulance surgeon for another interne on Nov. 26, lost his life by the collision of the ambulance in which he was riding with a large sightseeing automobile, on Fifth Avenue. Dr. Bartow, whose home was in South Orange, N. J., was one of the most popular physicians on the house-staff of the hospital. He was graduated from the academic department of Columbia University in 1901 and from the medical department of the university in 1905.

APPOINTMENTS.

DR. TIMOTHY J. REARDON has been appointed a trustee of the Boston City Hospital.

DR. E. O. OTIS has been appointed visiting physician to the State Sanatorium for Tuberculosis at Rutland, Mass.

Original Articles.

THE PHYSICIAN'S DUTY TOWARDS TUBERCULOSIS.*

BY A. T. CABOT, M.D. BOSTON,
President Massachusetts Medical Society.

It has been said, and I think justly, that "every death from preventable disease is an insult to the intelligence of the age." Perhaps this statement would find more ready acceptance if I were to put it in another form and say that it is an evidence of lack of intelligence if a community does not put forth its every effort for the eradication of the preventable diseases in its midst. We cannot too frequently ask ourselves the question whether we are doing all that is possible in this direction. Are we applying all the measures that our knowledge of disease can suggest for the improvement of the health of our respective communities? I am afraid that every well-informed man must answer these questions in the negative.

We are doing very much and we are constantly doing more for the improvement of the public health, but much remains to be done before we can feel that we are putting into full practice the knowledge that we have of the nature of disease. The work of our boards of health has been so excellent and has accomplished so much that I could pleasantly occupy the time at my disposal in singing their praises. They are constantly widening the scope of their work along scientific lines. Their efforts, however, are often met with opposition or smothered by indifference. Opponents of vaccination or of antitoxin or of quarantine constantly evade their rules. Some of their measures in the interests of the public health curtail the personal freedom of the individual. Measures such as these, however important they may be, cannot be undertaken until the public is educated to a proper understanding of them.

The education of the public is in the hands of the practicing physician, and it is the duty of every practitioner to interest himself in this missionary work. The boards of health require the active, continuous support of their medical brethren to enable them to carry out in a lukewarm community the radical measures which they feel to be important.

This is a favorable time for us to approach the people of Massachusetts with plans for an intelligent advance in preventive medicine. Never in the history of the world has the understanding of the nature of disease been as widespread as now. The triumphs of antiseptic surgery, the success of antitoxin in the treatment of diphtheria, the control of yellow fever, have convinced the laity that scientific medicine is of real practical value.

The field of preventive medicine opening before us is a wide one, but I shall confine myself to-day to a discussion of one disease, and that the most prevalent one in this commonwealth and the most fatal. You at once see that I mean tuberculosis. I select this because it is the most serious disease which at present assails our people, and because I believe that our present knowledge of its nature if thoroughly applied would greatly curtail, if not absolutely hinder, its spread. The very prevalence of tuberculosis explains in great part the apathy of the community in regard to it. Many persons look upon it as one of the necessary ills that flesh is heir to, and they accept it with resignation, not realizing that it might be brought under control.

Tuberculosis is an extremely contagious disease. The public does not realize this because, being so slow in its effects, the first symptoms may appear months after the contact which produced the disease. Every physician, however, can readily think of cases in which the evident spread of the infection from one person to another could be traced. Another reason why the public is not fully aroused to an understanding of the contagiousness of tuberculosis is that many of the people affected never show it. Any one who sees many autopsies well knows in how many cases cicatrized points are found in the lungs, or caseous and calcified lymph nodes are found about the bronchi, showing that in that individual the bacilli have effected an entrance, but have been unable to overcome the resistance which nature affords in the tissues. Probably if we could recognize all of these cases of abortive tuberculosis we should find that the disease is about as contagious as any of the infectious diseases, and should get a rather unpleasant surprise in discovering how generally the tubercle bacilli are sown through the community. Many good observers believe that we all constantly take tubercle bacilli into our air passages, and that we are sufficiently resistant to them to nullify their effects.

The first problem of prevention, then, is to greatly diminish the amount of this tubercular poison throughout the country. Fortunately, only a portion of those persons having tubercular material within their organs transmit the contagious element to others. Well encapsulated tubercular foci do not spread the disease, but suppurating processes communicating with the open air, either through the air passages, through the bowels, through the bladder, or through the skin, allow the bacilli to get outside of the body, and if these discharges are not destroyed, but are allowed to become dry, the bacilli are distributed through the air in the form of dust, and it is in this way, probably, that most of the infection is transmitted.

Our efforts to prevent the spread of the disease then, should be directed to the destruction of the bacilli as rapidly as they are thrown out of the body. No one can doubt, if all tubercular discharges were disinfected so that no living bacilli were distributed from each case, that the spread of the disease would soon cease. The cases which furnish the contagious element are usually easy to recognize. Pulmonary tuberculosis comprises the greater majority of them, and the bacilli are thrown out in the sputa. The dis-

* Address before the Hampden District Medical Society.

charges from foci of surgical tuberculosis are also a source of danger which should be guarded against. It is manifestly impossible to follow the tubercular cases in the community closely enough to make sure that each patient destroys the sputa and soiled dressings from tubercular ulcerations, or that they are thoroughly disinfected. The disease occurs extensively among poor people who have not the means to carry out careful precautions even if they had the intelligence to understand them.

How can we overcome these difficulties? What measures of control should we adopt? In a consideration of these we shall find that some measures are already in partial operation, others will be readily introduced, while others will require such a departure from the present habits of the people that they will be more difficult of adoption.

Registration of all cases of tuberculosis. — This should be compulsory. In this way we should learn the distribution of the disease in each locality and should gain a clear idea of the task before us in attempting its control. We should also have the means of judging from time to time what we had accomplished. Cases moving from place to place should also be reported.

Disinfection of premises. — A house in which a patient with tuberculosis has died or from which he has removed should be thoroughly disinfected at once. No such premises should be leased to or occupied by another tenant until the Board of Health has issued a certificate of satisfactory disinfection.

Instruction and sanitary inspection of cases that cannot be separated from their homes. — This should be carried out by printed circulars sent to all families in which tuberculosis exists. Much may be done by regular visits of a district nurse who should report at regular intervals to the Board of Health. She can teach the precautions proper to each case and can encourage the patients and their friends to observe the rules taught in the circulars. This inspection and instruction can do great good if the physicians through the state give it their approval and support.

Sanatoria for curable cases. — These should be liberally provided. Every case that is cured is a patient saved. But further than this, in each instance a person that is an active menace to the community by reason of the bacilli being scattered abroad is converted into a perfectly safe and innocuous companion. These health resorts are in this way steadily diminishing the total of tubercular poison.

Hospitals for the isolation and care of the actively infectious and seemingly incurable cases. — These are urgently needed and should be provided by the public funds as well as by private benefaction. Such desperate cases are now unable to find hospital accommodations where they can be cared for. They are thrown back upon the community and remain burdens to their friends and serious foci of disease, spreading contagion in the neighborhoods where they reside.

In properly administered hospitals with systematic disinfection these cases could be made comfortable and at the same time be kept from spreading contagion. While living in isolation they would not be debarred from seeing their friends; for visitors to such a hospital would run practically no risk of infection if they observed obvious and simple precautions.

Exclusion of children with contagious forms of tuberculosis from schools. — This is a precaution of obvious importance, and one which the public health authorities should put in practice as soon as possible. Tubercular children should be taken out of school for their own good. The confinement of their studies is certain to aggravate the disease. Under these circumstances it is obviously foolish to allow them to jeopardize the health of their companions.

The provision of educational opportunities for cases in which study is wise must wait a future solution.

To what extent operatives in factories and other work people can be protected from contagious cases is not now clear. Logically, tuberculous persons should not work in crowded rooms with the healthy. How to soften the hardship of depriving a man of the work upon which his family depends when he is still able to do it may be a difficult question to solve. Private charity might provide for many such cases, conferring on the community a benefit even greater than that to the individual. Doubtless many operatives with no one but themselves dependent on their labor could, when thrown out of work, be taken care of in hospitals, and would find in this way a distinct betterment of their condition. As cases become less abundant, this kind of isolation will be easier to provide.

In prisons and state reformatories tuberculous patients should be kept apart. — This duty of the state is too obvious to need discussion. Prisoners or wards of the state should not be exposed to danger of avoidable infection.

After this brief sketch of the situation it behooves us to consider what part the medical men of the state should take in arousing interest and pushing forward the adoption of precautions as fast as they are approved. The fight against tuberculosis will be a long one and little will be accomplished by scattered and desultory efforts; whereas a concerted movement by the physicians throughout the state may accomplish much.

In order to bring about such concerted action it has been proposed that each District Society shall appoint a committee to consider the question of the control of tuberculosis. The question will thus be studied in different parts of the state and the needs of each locality will be specially considered. These committees should be expected to further measures that they approve in every way in their power, and they should invoke the aid of their professional brethren and of the community in carrying out their plans.

They should report at regular intervals to their respective districts, should promote discussions on any measures that are new and to which they

fear opposition. In this way a constant campaign of education will be carried on in a conservative manner.

If the chairmen of these District Committees arrange for occasional meetings among themselves they will get the opportunity to compare their experiences and will get many useful hints to take back to their districts.

The anti-tuberculosis movement has interested the laity and committees non-professional have been formed, have done zealous work and have accomplished considerable amelioration of conditions.

I have endeavored to show you how a powerful organization might be effected in the Massachusetts Medical Society which would continue as long as the need existed and which would enable the profession throughout the state to take concerted action, so that we might all pull together and work harmoniously. We must expect to keep up our efforts for many years and must provide for the active continuance of these committees even from generation to generation.

As we begin to show results in the diminution of tuberculosis in the state we shall be assisted more and more by the enlightened co-operation of the people who will give us increasing moral and material support.

FOUR UNUSUAL CASES OF ANEURISM.

BY EDWIN A. LOCKE, A.M., M.D.
(From the service of Dr. James J. Minot, Long Island Hospital.)

Among the considerable number of cases of aneurism occurring in the service at the Long Island Hospital during the past five years the following are of special interest:

Case I. *Syphilis in youth; tuberculosis of both hip joints of twenty-five years' duration; double inguinal hernia; marked arteriosclerosis; relative mitral insufficiency; tabes dorsalis; chronic interstitial nephritis; deformity of spine; aneurism of left axillary artery, possibly following trauma, which reached enormous size, and finally ulcerated externally; death after five days.*

W. T. B., aged fifty-four years, entered hospital Nov. 26, 1901.

Family history not important.

Personal history: As a rule excellent general health; until recently able to work steadily. Syphilis when a young man. Moderate drinker; tobacco to excess.

About twenty years ago a small lump, about the size of a walnut, appeared on the outer aspect of the right hip; it was not painful or tender. In about three weeks' time this lump softened and broke down, discharging large quantities of foul-smelling pus. Shortly after this, a similar lesion appeared on the left hip, with the same sequelæ. These two sinuses have never healed and discharge purulent material to the present day. Four years ago, after a fall, a small nodule appeared at the base of the coccyx; this was opened and curretted and healed in a short time; it has never troubled him since. He has occasional attacks of acute pain referred to either hip and radiating down legs. These pains have been unusually severe for the past few days, as a result of which the patient has been unable to obtain sufficient rest and sleep at night and is more or less exhausted.

Physical examination: Well developed and nourished. Pupils equal and regular, but react only slightly to light; tongue protrudes in straight line, clean and moist.

Lungs: Good resonance throughout; in left back beneath the scapula, the voice sounds are a little louder than over other places; at both apices respiration harsh and voice sounds slightly increased; few moist râles heard in both lower backs.

Heart: Dullness to the left to nipple line; apex palpable in fifth interspace; action regular, slightly forcible; aortic second accentuated; no murmurs. Pulses equal, regular and of high tension.

Abdomen: Nothing abnormal made out. Liver from sixth rib to costal margin; not felt. Spleen not enlarged. Double inguinal hernia.

Extremities: Knee jerks lively; plantars normal. No edema. Over the great trochanter on either side are small sinuses which discharge a thin, purulent secretion. Motion at hip joints good; no tenderness.

Thorax: Very unsymmetrical in consequence of dorsal kyphos and very marked scoliosis with concavity to the right; anteroposterior diameter increased; right shoulder lower than left.

Treatment: Rest in bed, tonics, antiseptic dressings to sinuses.

Dec. 4, 1901. Patient has had no pain for the last three days. His appetite is good and he sleeps well. Sinuses discharge very slightly. Discharged to-day to Almshouse (Long Island).

Sept. 9, 1903 (nearly two years later), re-admitted from Almshouse, with the following history:

Six days ago, while working on the wharf, the patient received a severe blow across the front part of the left shoulder and upper portion of the left chest from the stern line of the steamer *John Howard*. He suffered considerable at the time from the result of the accident, and three days ago he noticed that there was a lump under his left clavicle, which he discovered to be pulsating. He says he had never noticed the swelling before. He has worked on the wharf regularly since spring and has felt very well. Coming up the hill he gets out of breath, his legs are weak and, for the past few weeks, has not slept well at night because of "worry." For three months he has had some difficulty in using his right arm; the disability, he says, is due to stiffness and pain. Sinus on his hip still discharges and is dressed every day.

Physical examination: Much bent over; fairly well nourished; somewhat senile in appearance; intellect clear. Left pupil 0.4, right 0.2 cm. in diameter; neither reacts to light or distance. Tongue protrudes straight in median line, slightly tremulous, clean and moist.

Heart: Dullness at the level of the third rib, 4½ cm. to the right of the median line, 15½ cm. to left at the level of the fourth rib; apex in fifth interspace, 3½ cm. outside nipple line; impulse strong; systolic murmur heard with maximum intensity at apex, soft in character, transmitted outward, and with diminished force toward the base; it is also heard over both subclavian arteries; second aortic sound clear; pulmonic second sound loud. Pulses intermittent, synchronous, high tension.

Lungs: Somewhat hyperresonant throughout; occasional squeaky and sonorous râle heard at the end of expiration.

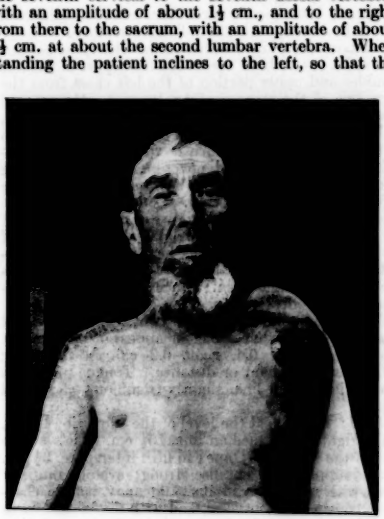
Directly below the middle of the left clavicle, inside the coracoid process, is a tumor about 4 x 5 cm. in diameter, with visible pulsation; it is not red or tender; on palpation it is tense and throbbing; a distinct thrill can be felt with each systole; on auscultation a soft, blowing sound is heard with each systole. Radial pulses apparently synchronous and of equal volume and tension.

Abdomen: Shortened in vertical diameter; moderately tense and tympanitic; no tenderness; no tumors felt. Areas of liver and spleen not satisfactorily made out. Double reducible inguinal hernia, each about the size of an egg. Genitalia normal.

Extremities: Knee jerks absent on both sides; no ankle clonus; plantar reflex present on both sides; no Babinski; Romberg's sign marked. There is considerable inco-ordination, but no disturbance of sensation. About 8 cm. from the left external malleolus is a rough surface over the fibula (old fracture). The left little finger is absent except for the proximal half of the first phalanx. The left forearm is distorted, being bent at the junction of the middle and lower thirds, with an anterior angle; at this point there is decided enlargement of the radius, and, opposite it, of the ulna; there is no power of pronation or supination (mal-united fracture of the left radius and ulna).

Skin: Numerous small petichiæ are present over the chest. The face is also much injected. Over both trochanters the skin is reddened and indurated over an area 5 x 10 cm. in diameter. On the left side is a small sinus admitting a probe for a short distance; the right side is closed. (Tuberculosis of both hips.)

The spine is much distorted, being very convex posteriorly at about the mid-dorsal region, so that the depth of the lower chest is apparently half again more than normal. There is double scoliosis, to the left from the seventh cervical to the seventh dorsal vertebra, with an amplitude of about 1½ cm., and to the right from there to the sacrum, with an amplitude of about 4½ cm. at about the second lumbar vertebra. When standing the patient inclines to the left, so that the



seventh cervical spine is from 10 to 15 cm. to the left of the median line. On account of this double deformity the chest is more prominent on the left in front; the ribs are very close to both ilia, and the lower ribs on the left hand side as they approach the median line in front are bent underneath the others, making a concavity upward.

Urine: 1012; color, normal; acid; albumin, 0; sugar, 0.

Nov. 29, 1903. Very marked swelling of the left arm. Last night he was unable to sleep at all on account of pain. The aneurism seems to have increased in size, though no appreciable difference is noted from day to day. The left arm is swollen to nearly twice its normal size, moderately cyanotic, edematous; surface cold, not tender. Pulse barely felt. Otherwise the examination is as above. Urine, as at entrance.

Feb. 11, 1904. After several weeks the symptoms above noted gradually disappeared, more or less coincidently with a progressive enlargement of the tumor.

May 1, 1904. To-day the patient had an attack of vertigo, fell from his chair and was unable to rise. The aneurism has greatly increased in size, apparently dissecting its way down the outer wall of the chest as well as bulging prominently in front of the clavicle. It is about the size of a small cocoanut. Over an area of about 5 x 10 cm. at upper portion the skin is deeply reddened and very tense. Urine: Color, normal; 1,014; acid; albumin, slightest possible trace; sugar, absent; sediment shows many hyaline casts, some with renal cells adherent; many fine granular casts, a few of large diameter; occasional renal cells and leucocytes.

May 30, 1904. Several fainting attacks since last note. The patient complains of sensation of great tension over tumor which is rapidly growing.

June 23, 1904. Very rapid enlargement of the tumor for the past few weeks. Severe dyspnea, the respiration at times falling to seven per minute; dysphagia; marked cachexia. Over the most prominent part of the tumor is an ulcer about 9 x 12 cm.

June 29, 1904. While at stool the patient suddenly had a severe bleeding from the aneurism at the point of ulceration, with moderate symptoms of hemorrhage following. Bleeding controlled by tight compress.

July 3, 1904. Constant oozing from aneurism; dressing renewed and sloughing area about 4 cm. in diameter found at center of the ulcer. Considerable paroxysmal pain down inner side left arm.

July 6. Dressing has foul odor and an attempt to change it resulted in the loss of about two pints of blood; alarming symptoms of hemorrhage.

July 7. Profuse uncontrollable hemorrhage at 12.30 A.M., resulting in almost immediate death.

AUTOPSY No. 04.42 (718). Regular No. 16,623. July 8, 1904. Dr. George B. Magrath. Autopsy 34½ hours post mortem.

ANATOMICAL DIAGNOSIS:

Aneurism of the axillary artery with consequent necrosis of the ribs, pectoral muscles, skin.
Scoliosis.
Chronic adhesive pleuritis.
Hydropericardium.
Edema of the lung (left).
Emphysema of the lungs.
Acute and chronic splenic tumor.
Chronic interstitial nephritis.
Multiple cysts of the kidney.
Dilatation of the bladder.
General arteriosclerosis (slight).

Body: That of a man fifty-nine years of age; length, 162 cm.; marked deformity of the trunk, characterized chiefly by a backward bowing of the spine mainly in the thoracic segment, combined with rotation to the left; accompanying this is a bulging backward and outward of the lower and back part of the right thorax; the whole trunk is deflected to the left to the extent of 10 or 15 cm.; rigor mortis present; little or no post mortem lividity; marked pallor; left pupil, 0.6, right, 0.2 cm. in diameter; slight arcus senilis. The front of the left chest presents a tumor about 25 cm. in diameter, extending from near the sternal border outward and behind the axillary line for a distance of about 8 cm. The center of this projection which is fluctuant and for the most part covered with intact

skin, presents a loss of substance 14 x 10 cm., protruding from which is a mass of laminated fibrin, the outer portion of which is dry and black; the edges of the ulcer are smooth and rounded; the mass of clot is about 6 cm. in elevation. The left forearm presents marked deformity of the bone characterized by lateral thickening at about the junction of the lower and middle thirds; the little finger of the left hand is missing. The skin over each trochanter is scarred, that upon the right side presents at its center a small crust.

Upon section, subcutaneous fat .5 cm. in thickness; muscles of the right side of the chest pale red and fairly well developed; those of the left side yellow, and upon further dissection necrotic within a region in general corresponding to the tumor above noted. Reflection of the skin of the left side of the chest reveals a large mass of gray red clot, immediately subcutaneous in its position; removal of the mass of clot (weight, 1,890 gm.) reveals an area of depression, involving nearly the whole of the front of the wall of the left chest, 17 cm. in diameter, and about 8 cm. in depth; the floor of which is composed of the second, third, fourth and fifth ribs, which are bare, eroded, and, in the case of the second and third, discontinuous; the second being separated 3 cm. from the sternum and its outer segment depressed 3.5 cm. below the inner; the intercostal muscles are necrotic, and the floor of the cavity presents much adherent clot, some of which is in a condition of puriform softening. Above, this region is bounded by a sac 10 x 15 cm., the long axis directed outward; above and to the inner side this sac presents a smooth surface, in places blood-stained, and continuous with the axillary artery outward, the subclavian inward; this sac opens downward and is continuous with the depressed area in the chest wall above described; its edges at this point disappearing in the mass of clot; the most distal portion of the sac is in the lowest part of the axilla, bounded outwardly by the humerus, and is 11 cm. below the acromion process. The inner aspect of the sac presents an oval area 3 x 2 cm., the inner side of which is continuous with the subclavian, and the outer with the axillary artery. The sac throughout the greater part of its course is overlaid with laminated fibrin, the removal of which reveals a structure faintly resembling the arterial wall.

Thorax: (Internal examination): Height of diaphragm, fifth rib on right side, sixth on left.

Pleural cavities: Left occluded in its lower and front part by firm fibrous adhesions uniting the lung with the chest wall; right presents a few old fibrous adhesions at its apex.

Pericardial cavity: Contains about 50 cc. clear straw-colored fluid.

Heart: Weight 340 gm.; upon section, cavities contain a very small amount of red clot; myocardium pale brown red. Wall of left ventricle 1.3, of right 0.3 cm. in thickness. Mitral valve 11, aortic valve 9, pulmonary valve, 9, tricuspid valve, 12 cm. in circumference. Depth of left ventricle 10.3 cm. Valves normal; cavities slightly dilated. Coronary arteries show a very slight degree of sclerosis.

Lungs: Left, at the site of the adhesions to chest wall, which is about the middle of the front border, is some superficial necrosis beneath the adhesions; consistence soggy; general color gray, with moderate carbon pigmentation; upon section, cut surface bathed in abundant frothy fluid; the upper lobe faintly crepitant. Right, at the apex, shows a small puckered scar; upon section, gray red; fairly crepitant throughout; somewhat downy.

Abdomen: Peritoneal cavity interrupted by fibrous adhesions uniting the great omentum with the spleen.

Spleen: Weight, 400 gm.; symmetrically enlarged; upon section, follicles prominent on a brick red field; pulp much increased, considerable turbid, semi-fluid material being yielded on gentle scraping; consistence fairly firm.

Pancreas: Negative.

Gastro-intestinal tract: Negative.

Liver: Weight, 1,500 gm.; surface smooth; general color pale brown; upon section, markings faintly visible; consistence normal.

Gall bladder: Normal.

Kidneys: Weight of left 150 gm.; length 11, breadth, 5 cm.; capsule adherent to a finely granular surface; the outer border presents two smooth-walled cysts, the largest 2 cm. across; mottled gray red; upon section, markings fairly distinct; cortex .5 cm. in thickness; consistence tough. Right: Weight, 55 gm.; length, 9, breadth, 4.5 cm.; by two transverse furrows the organ is divided into three lobules; upon section, cortex .3 cm. in thickness; in other respects similar to the left kidney.

Adrenal glands: Negative.

Bladder: Dilated, length 16 cm.; inner surface smooth.

Prostate: Normal.

Aorta: Upon section, the arch almost wholly smooth, a few calcareous plates present on its descending portion; the abdominal segment shows a few slightly elevated, yellowish plaques and a few depressed calcareous plates; similar plates are present at the origin of the iliac arteries.

Vertebral column: Viewed from in front presents a marked curvature to the left, involving the lower thoracic and the lumbar segments, the amplitude of the curve about 8 cm.; associated with this is some twisting to the left of the upper thoracic segment and to the right of the remainder of the column. There is some thickening of the bodies of the vertebræ, most noticeable in the mid thoracic and the lower lumbar regions.

Cranium: Not examined.

Spinal cord: Not examined.

In the above case we were fortunately able to observe the aneurism throughout its entire course, covering a period of approximately ten months. The sequence shown here of early syphilis, followed in later years by arteriosclerosis, tabes dorsalis, and, finally, aneurism, seems a most definite one, and although the direct injury appears to have been the immediate cause, the dependence upon the antecedent syphilis can hardly be doubted. Sansom[1] believes the relation of syphilis to aneurism to be a very close one, estimating that in 82% of all cases there is an antecedent history of lues. Etienne[2] in 240 cases found a history of syphilis in 70%. Heiberg[3] in 28 cases, 43%. Camac,[4] as a result of his study of 340 reports of autopsies on aneurism, states that aneurism is attributable to syphilis in about 32% of cases. The rupture externally is somewhat unusual, in Huchard's[5] 350 cases occurring but twenty-one times. Boyd[6] collected 142 cases of aneurism from the London hospitals and but 8 of these were of the axillary artery.

Case II. *Arteriosclerosis; aneurism of the transverse aorta, the first sign of which was a sudden attack of hematemesis; nine days later a second attack with*

[1] Sansom, A. E.: Twentieth Century Practice of Medicine, 1895, iv.
[2] Etienne: Ann. de Dermatologie, 1897, 3 s., viii, p. 1.
[3] Heiberg: La Semaine Med., July 27, 1892.
[4] Camac: Am. Journ. Med. Sc., 1905, cxxix, p. 857.
[5] Huchard: Maladie de Cœur.
[6] Boyd: Encyclopedia Medica, vol. i, p. 215.

death after ten hours, from ulceration and hemorrhage into the esophagus at the level of the bifurcation of the trachea.

E. P., colored woman, of sixty-six years, an inmate of the Long Island Almshouse. Transferred to hospital Jan. 14, 1903. The patient's mental condition made it impossible to obtain an accurate history.

Family history: Negative.

Past history: Patient has always been well. About ten years ago she vomited a small amount of blood; no history of gastric symptoms. Menstruation always regular. She has had two children, both of which were carried to full term, but they weighed only a pound and a half and soon died. She has had no miscarriages.

Present illness: While at breakfast patient suddenly vomited about five ounces of blood and gastric contents and had three more attacks before removal to the hospital. At the time of entrance she was in a somewhat syncopal condition. She has had no pain at any time; sleeps very poorly; has a good appetite; bowels are regular. She denies the use of alcohol.

Physical examination: Well developed and nourished; obese. Pupils equal; react to light and distance. Tongue protrudes straight; moist; slight white coat.

Lungs: Resonance good; occasional coarse, moist râle over both sides.

Heart: Moderately enlarged to left; action regular and forcible; systolic murmur at apex, not transmitted; pulmonic second sound accentuated. Pulse slightly irregular; good tension; arteries moderately sclerotic.

Abdomen: Large and thick walled. Liver from the fifth space to 2 cm. below the costal margin. Spleen not felt.

Extremities: Knee jerks present; no ankle clonus; plantars normal.

Urine: Normal.

Jan. 15, 1903. Patient passed a comfortable night and seems in fair condition this morning. No pain or vomiting. No gastric symptoms. She has been ordered soft solids which she eats with apparent appetite.

Jan. 25, 1903. The patient seemed perfectly comfortable until to-day. While eating breakfast this morning she was suddenly seized with an attack of vomiting similar in nature to that which occurred on the 17th. The vomitus consisted of food and frothy blood of a bright red color, and was profuse enough to quickly cause severe anemia and grave symptoms. She responded quickly to treatment and within an hour appeared to be resting comfortably. Examination of the lungs showed only a few scattered râles. The heart sounds rapid and weak but fairly regular; soft systolic bruit at apex; pulmonic second sound louder than aortic. Pulse very weak and rapid.

About six hours after the first attack the patient vomited two pints of bright red blood. She failed slowly, not responding to treatment, and finally died at 5 P.M.

AUTOPSY No. 03:11 (564). Regular No. 13,668. Feb. 1, 1903. Dr. George B. Magrath.

ANATOMICAL DIAGNOSIS:

Hypertrophy and dilatation of the heart.
Hemorrhage into the stomach.
Umbilical hernia of the omentum.
Cholelithiasis.
Chronic pelvic peritonitis.
Multiple myomata of the uterus.
Aneurism of the arch of the aorta.
Erosion of the esophagus.
General arteriosclerosis.

Body: That of a mulatto woman, sixty-six years of age; length, 165 cm.; well developed; obese; rigor mortis absent; slight lividity of dependent parts; pupils equal, .4 cm. in diameter.

Upon section, subcutaneous fat, 7 cm. in thickness; muscles, red, thin and fatty infiltrated. Just above the umbilicus the peritoneum presents a circular opening, 2 cm. in diameter, communicating with a pouch lined by peritoneum, and lying wholly within the substance of the abdominal fat; this cavity is occupied by a segment of the great omentum. Vermiform appendix and mesenteric lymph nodes normal.

Thorax: Height of diaphragm fifth rib on right side, fifth interspace on left.

Pleural cavities: Left, normal; right contains about 300 cc. of serous fluid.

Heart: Weight, not taken; removed in continuity with the lungs and aorto; upon section, myocardium brown red and fairly firm. Wall of left ventricle 1.3, of right .3 cm. in thickness. Epicardial fat abundant, infiltrating extensively the wall of the left ventricle. Aortic valve, 7 cm. in circumference. Depth of left ventricle, 10.5 cm. Valves normal. Cavities somewhat dilated.

Lungs: Alike; the fronts gray; backs bluish red; generally crepitant; the backs of slightly increased consistence.

Abdomen: Peritoneal cavity as above noted.

Spleen: Weight, 75 gm.; upon section, brick red; markings fairly distinct; pulp not increased; consistence lax.

Stomach: Somewhat dilated and distended; upon section, contains about 1,500 cc. of bloody fluid containing large masses of currant jelly clot.

Intestines: Not remarkable.

Pancreas: Normal.

Liver: Weight, 1,450 gm.; surface smooth; general color brown; upon section, tubules distinct, consistence friable.

Gall bladder: Shrunken; its walls closely investing a soft brownish calculus, 1.5 x 3 cm.

Kidneys: Weight of both 290 gm.; upon section, capsule strips easily from a smooth surface; pale; markings fairly distinct; cortex 0.6 cm. in thickness; consistence normal.

Adrenal glands: Normal.

Bladder: Normal.

Genitalia: The oviducts are attached to the rear wall of the pelvis by old fibrous adhesions. The uterus is of irregular contour, presenting multiple nodular elevations upon its peritoneal surface, 1 to 2 cm. in diameter, which, upon section, are fleshy, and sharply defined from the myometrium in which some of them are embedded. Ovaries normal.

Aorta: Upon section, presents marked arteriosclerosis, with calcification and some general dilatation; its circumference 3 cm. above the aortic valve 10.5 cm., its inner surface furrowed and marked by closely set, yellowish, slightly elevated areas, alternating with others, depressed, opaque, yellow and shell-like; many of the latter are eroded. The floor of the transverse portion of the arch, opposite the origin of the left subclavian artery, presents a circular opening, 2 cm. in diameter, with smooth, rounded edges; this opening communicates with a sac the upper part of which is bounded by everted portions of the wall of the aorta, which is generally spherical in form, and about 6 cm. in diameter; this sac is filled up to within 2 cm. of the opening with fairly firm laminated clot; it lies in general below and behind the arch of the aorta, being bounded on the right by the trachea and right primary bronchus, and behind by the esophagus, on the left by the aorta and the left primary bronchus, and behind by the esophagus; the latter presents a backward flexion over the sac, and upon section, at a point oppo-

site the bifurcation of the trachea, presents upon its anterior wall an irregularly oval area, its long axis vertical, 1.5 x 2.5 cm., within which there is loss of substance; the edges are ragged, greenish red, the floor consisting of tough, laminated clot; a probe inserted into the mouth of the sac passes freely along the left side of the latter into the ulcer of the esophagus.

Organs of the neck: Esophagus presents conditions above described.

Cranium: Not examined.

Spinal cord: Not examined.

This case is remarkable, first, because of the point of rupture and, second, because of the unusual length of time (eleven days) between the first and the fatal hemorrhage. Among 4,593 autopsies, Kelynack[7] found 32 of ruptured thoracic aneurism, only 3 of which, or 9.37%, were into the esophagus. Huchard's[8] 250 cases of aortic aneurism include only 6 which ruptured into the esophagus. The character of the aneurism found at autopsy readily explains the delay in the fatal termination. A small saccular chamber nearly filled with laminated clots and with a small opening on one side into the esophagus and on the other side into the aorta probably afforded the proper anatomical condition for an intermittent partial or complete closure of the opening into the esophagus.

Case III. *Syphilis; twelve years later multiple saccular aneurism of the aorta with rupture into the retroperitoneal tissue and subsequent erosion of vertebræ, hydrothorax and atrophy of left kidney; arteriosclerosis; exploratory laparotomy; death four months after onset of symptoms.*

F. Q., a laborer of thirty-eight years, entered hospital Oct. 16, 1905. (No satisfactory history obtained because of patient's mental impairment.)

Family history: Apparently negative.

Personal history: Always a vigorous man; no serious illness. Syphilis twelve and gonorrhea five years ago. Two months ago sharp pains suddenly appeared in the lower back, extending around to the groins. The pains are cutting, constant and somewhat relieved by lying down. Now severe pains over abdomen as well.

Physical examination: Well-developed, muscular man. Pupils react to accommodation, but not to light; tongue protrudes straight in median line, not tremulous.

Lungs: Breathing and resonance normal throughout; no râles.

Heart: Normal size; sounds clear; regular; no murmurs; second sound accentuated.

Abdomen: Rather full and general voluntary spasm of muscles which prevents satisfactory examination; nothing definite made out. Rectal examination negative.

Spine: No deformity but motion in all directions is almost entirely in dorsal and lumbar regions, the least flexion causing great pain. Even with aid, the patient can sit up in bed only with agony. Considerable tenderness on deep pressure in left back and side below costal border, but none over nerve trunks. No signs of any abnormality in hip joint. Chain of small lymph nodes in groin.

Patella reflexes lively; plantar normal; no clonus; no ataxia.

Scar on glans penis. Temperature normal.

Urine: Normal color; 1,034; albumin, trace; sugar, 0; sediment consists of many compound granular cells and fine granular casts, with few renal cells.

Blood: Erythrocytes, 5,216,000 per cmm.; white corpuscles, 7,100 per cmm.; hemoglobin, 70%.

Nov. 12, 1904. Patient's condition remains about the same. Almost constant cutting pain deep in abdomen and through lumbar regions, more severe on left and greatly aggravated by any attempt to move about or, in fact, by any position except on his back. The abdomen is more tender and tense than at entrance; nothing felt; dull in flanks. In left lumbar region is a large, pulsating, very tender area with indefinite limits.

Dec. 5, 1904. Patient now has a distinct pulsation in left epigastrium and extending round to back; nothing definite felt because of muscular spasm; very tender, soft bruit heard over this area. The pain is more severe and frequently extends down left leg and to the left testicle. Repeated examinations of the urine have shown essentially the same characteristics as at entrance.

Dec. 9. Area of visible pulsation increased especially to the right; bruit much louder and synchronous with the pulsation in abdomen. Patient suffers greatly and lies on back with thighs flexed. The condition seems serious and exploratory laparotomy advised.

Dec. 10. Operation. Dr. J. H. Cunningham. Incision of 6 in. along left border of rectus muscle. On opening the peritoneal cavity a very large pulsating tumor seen to occupy nearly the entire upper left quadrant, obscuring the left kidney and apparently postperitoneal. Patient's condition and evident hopelessness of operative interference made further operation inadvisable. Considerable shock.

Dec. 15, 1904. Good recovery from operation, and patient doing well until to-day, when he suddenly collapsed, giving symptoms and signs of hemorrhage. Later he became very anemic. Failed rapidly and died Dec. 16, 1904.

Autopsy No. 04.73 (736), regular No. 20,685. Autopsy, thirty-six hours post mortem. Dr. G. B. Magrath.

ANATOMICAL DIAGNOSIS.

Retroperitoneal hematoma.
Multiple saccular aneurism of the aorta.
Erosion of the vertebræ.
Chronic adhesive pleuritis.
Hydrothorax.
Dilatation of the left ventricle.
Anthracosis.
Atelectasis.
Edema of the lungs.
Emphysema of the lungs.
Acute purulent bronchitis.
Bronchopneumonia.
Acute splenic tumor.
Cloudy swelling of the liver, kidneys.
Hemorrhagic infarction of the kidneys.
Atrophy of the left kidney.
Compensatory hypertrophy of the right kidney.
General arteriosclerosis.

Body: That of a man thirty-nine years of age; length 176 cm.; powerfully built; fairly well nourished; rigor mortis present and full; faint lividity of dependent parts; pupils equal, 0.6 cm. in diameter; tattoo marks of the inner aspects of both forearms. The skin of the abdomen presents an incised wound 15 cm. in length, extending from a point 2 cm. below the costal margin downward parallel with the median line, and 5 cm. to the left of the umbilicus; the edges are clean and somewhat fresh; wound closed by sutures.

[7] Kelynack: Lancet, July 24, 1897.
[8] Huchard: Maladies de Cœur.

Upon section, subcutaneous fat .3 cm. in thickness; muscles red and rather thin; the great omentum attached to the anterior wall of the abdomen along a line corresponding with the incision above noted, by rather easily separable fibrinous adhesions; the peritoneum along the line of incision shows some ecchymosis and is overlaid in places with a thin layer of fibrin; the adjacent coils of intestine are overlaid with a small amount of red clot; the peritoneal cavity contains, chiefly in its lower part, a moderate amount of thin, bloody fluid containing fragments of red clot; the peritoneum in general smooth, that of the left iliac region dark bluish red and elevated as though from contained clot beneath; the meso-ileum throughout the greater part of the middle portion of the intestine, along the line of attachment of the latter, is of dark purplish red color within a zone about 2 cm. in diameter.

Thorax: Height of diaphragm fifth rib on right side, fifth on left.

Pleural cavities: Left: Presents one fibrous band in front and contains 1,000 cc. of clear, brownish fluid in which are occasional flakes of fibrin; right, interrupted by fibrous bands which are edematous in the upper, back and lower parts, and contains about 200 cc. of clear fluid.

Pericardial cavity: Normal.

Heart: Weight, 330 gms.; epicardial fat fairly abundant; upon section, cavities of the right side contain red and white clot; those of the left side empty; myocardium pale brown gray. Wall of left ventricle 1.2, of right, .2 cm., in thickness. Mitral valve 10.2, aortic valve 6.6, pulmonary valve 7, tricuspid valve 12 cm., in circumference. Valves normal; cavity of left ventricle slightly dilated. Coronary arteries normal.

Lungs: Both show extensive carbon pigmentation, and are of slaty gray color, the apices showing puckered scars. Left: Collapsed upon removal; the upper lobe downy and feebly crepitant; the lower considerably retracted, of increased consistence, and but slightly crepitant; upon section, dark gray red; the cut surface moist and transparent; bronchial mucous membrane pink; bronchial lymph nodes black. *Right:* Rather voluminous; the pleural surface at the apex bears a few edematous fibrous tags; the upper lobe of downy consistence, the middle and lower noncrepitant and soggy; upon section, the upper lobe gray red and moist; the lower dark red; the cut surface in the main transparent, under pressure yielding abundant frothy fluid; studded with fairly numerous, slightly elevated, pink, granular areas from 2 to 3 mm. across, many of which under pressure yield plugs of pus; the bronchi of the lower lobe, somewhat dilated, containing rather abundant mucopurulent material; bronchial lymph nodes black.

Abdomen: Peritoneal cavity in general as above noted; the tip of the gall bladder attached to the great omentum by fibrous adhesions; vermiform appendix and mesenteric lymph nodes normal; the front of the stomach at the cardiac end near the entrance of the esophagus, shows an adherent, 3 x 8 cm., dark red, somewhat elevated subperitoneal clot; adjacent to this is a small mass of free red clot.

Upon removal of the stomach, intestines and liver the posterior wall of the abdomen from the lower border of the pancreas downward to the lateral portions of the pelvis is projected forward, presenting as a vague, somewhat lobulated mass, 20 cm. in length and about 12 cm. in average breadth; the anterior surface of this mass is 6.5 cm. from the level of the tip of the ensiform cartilage; it is continuous with the subperitoneal clot in the left iliac region; the overlying peritoneum is in general smooth and of a dark bluish red color; it is traversed from right to left (below upward) by the meso-ileum and by the duodenum. The upper portion of this mass projects as a hemispherical body into the left hypochondrium, at this point being in apposition with body wall; the mass is limited above by the diaphragm. Above the diaphragm presents a saccular mass traversed in front by the aorta and apparently continuous with it, 7 cm. in diameter; the entire mass, including the aorta, the kidneys and the retroperitoneal connective tissue, removed *en bloc* and further dissected from behind. Upon this aspect it is closely adherent to the vertebral column and the contiguous portions of the chest wall; the bodies of the vertebræ, including the eighth and twelfth, are extensively eroded, the eighth and ninth, throughout the greater part of their extent; the tenth, eleventh and twelfth, chiefly upon their left lateral aspect; the intervertebral discs are spared and project strongly; the erosion of the eighth and ninth vertebræ is of a depth of from 1 to 2 cm. Below, the mass is continuous with extensive retroperitoneal clot extending downward mostly upon the left side, to the symphysis and into the pelvis.

The mass removed and viewed from behind presents upon the left a mass of rather freshly formed red clot about 500 gm. in bulk; removal of this reveals an irregularly oval cavity the posterior limits of which correspond with the vertebral column and the wall of the chest; its long axis vertical, 13 cm. in diameter, its breadth 10 cm.; above, the cavity is bounded by a mass of clot beneath the peritoneum and extending upward to the diaphragm; in front, laterally and below, by similar extensive masses of clot, retroperitoneal and to a certain extent within the substance of the psoas muscle. Internally it is continuous through an aperture 5 cm. in diameter, with the aorta; this aperture which is in the left antero-lateral wall is at the level of the renal artery; a probe inserted into the latter at the hilus of the kidney enters the cavity at a point upon its anterior wall, 4 cm. from the median line of the aorta. The edges of the opening between the cavity and the aorta are rounded and over them is reflected the inner wall of the aorta which is continuous through a considerable part of its extent with the inner surface of the sac, presenting a smooth, lustrous surface with many ecchymoses; the cavity further contains in its deeper parts a considerable amount of laminated red and white clot, portions of which are rather friable. At the level of the diaphragm and above it the aorta presents a saccular dilatation springing from its posterior wall at a point 2.5 cm. above the sac already described; bounded posteriorly by the bodies of the eighth and ninth thoracic vertebræ; its posterior walls wanting upon removal, and communicating with the aorta through an opening 3 cm. in diameter, with rounded edges; the inner surface of the aorta is continuous with that of this sac throughout its anterior and lateral portions; behind, its walls contain considerable laminated clot infiltrating between them and the vertebral column and the diaphragm; at a point 6 cm. above the opening of this sac from the aorta, and upon the left lateral aspect of the latter, is a shallow, saccular pocket 1 cm. in diameter, and about the same in depth, corresponding with the origin of the intercostal artery; at the base of this there is slight loss of substance, the surface grayish red, soft, and bearing some attached clot. To the right and in front of the aorta the retroperitoneal tissues are extensively infiltrated with dark red clot several centimeters in thickness, surrounding the inferior vena cava and to some extent the kidney.

The aorta itself, in its abdominal segment is deflected to the right about 3 cm. from the median line; its inner aspect in the lower portion of the abdominal segment

is smooth, save for a few very slightly elevated and vague, yellowish areas of irregular outline and less than 1 cm. in diameter; in the thoracic segment the inner surface presents a considerable degree of wrinkling, longitudinal, shallow and rather fine furrows alternating with linear elevations of slight degree and yellowish white in color; in the transverse arch these wrinklings are irregular; there are present in addition slightly elevated areas of irregular outline, .5 to 1 cm. in diameter, some of which show a faint umbilication at their centers; in the vicinity of the small lateral sac above noted the wrinkling is more extensive, and in the vicinity of this sac are several very shallow, small out-pocketings; one such is also present on the anterior wall a short distance below this; the inner surface at a few points shows slightly opaque, yellowish areas, 1 to 2 mm. across; the walls are throughout soft, without calcification and without macroscopic ulceration. One lymph node at the arch is 2 cm. in diameter, and wholly calcareous. The ascending arch just above the aortic valves shows a faint transverse ring of yellowish white, nodular elevations; above this for a distance of 2 cm. the inner surface is studded with similar areas of less elevation, and 1 to 2 mm. across.

Spleen: Weight, 220 gm.; symmetrically enlarged; its anterior aspect near the border shows a faint area of depression 1 x 5 cm., within which the capsule is thickened; upon section, pale brick red; cut surface nearly diffluent; markings wholly indistinct; pulp greatly increased; consistence soft.

Stomach: The front wall of the cardia presents the mass of clot above noted; upon section, negative.

Intestines: The meso-ileum along the line of its attachment to the intestines presents the zone of ecchymoses already described; upon section, negative; colon, negative.

Pancreas: The head to some degree infiltrated with blood clot from behind; otherwise negative.

Liver: Weight, 2,150 gm.; surface smooth; edges somewhat rounded; color of the free surface dull brown red; upon section, lobular markings visible, the centers red, the borders pale brown; consistence normal.

Gall bladder: Normal.

Kidneys: Weight not taken; removed in continuity with the aorta. *Left:* Lies well forward and upon the upper and outer aspect of the general mass already described; length 10.5, breadth 6 cm. upon section, capsule slightly adherent to a faintly granular surface; general color pale grayish brown; the lower pole deep red; cortex .4 cm. in thickness; the pyramids and cortex of the lower portion of the kidney are deep bluish red, the free surface here ecchymosed; a renal vein at the hilus contains a non-adherent, but rather firm, grayish clot. *Right:* Length 12.5, breadth 7 cm.; pale gray; cut surface somewhat opaque; capsule strips easily from a smooth surface; cortex .7 cm. in thickness; glomeruli faintly visible and pale.

Adrenal glands: Negative.

Bladder: Distended; upon section, normal.

Genitalia: Tubules of testes thread easily; otherwise negative.

Abdominal wall, left lateral: Upon section, through the peritoneum a mass of underlying clot for the most part cruor presents, 5 to 6 cm. in thickness, extending from the costal margin into the pelvis; this region was continuous below with the general mass in the abdominal cavity.

Cranium and spinal cord: Not examined.

The above is chiefly remarkable for the extent of the hemorrhage into the post-peritoneal tissue and for the considerable prolongation of life (nearly two months) following the rupture.

CASE IV. *Male of eighty-one; general arteriosclerosis; multiple aneurism of the abdominal aorta with ulceration into the third portion of the duodenum and hemorrhage into the stomach and intestines. Symptoms extending over a period of three months; death four days after rupture.*

J. S., a plasterer, aged eighty-one years, admitted to hospital April 25, 1904.

Family history: Unimportant.

Past history: Patient had measles and pertussis when a child. Never sick otherwise except for a day or so at a time. Denies venereal.

Recent illness: nine weeks ago patient began to have sharp pain in the small of his back, and on this account he has been unable to work. After the pain disappears he feels weak. He says his back is not stiff, but he has extreme pain on rising or sitting. Some dyspnea on exertion. Otherwise he feels fairly well. Appetite poor; bowels constipated.

Physical examination: Fairly well developed and nourished; thin; senile. Pupils equal; react normally to light and distance; arcus senilis. Tongue protruded straight in median line; slight white coat. Pulse: Regular, 80, of fair volume and increased tension. Considerable sclerosis of radial artery. Chest: No dullness; breathing normal except for somewhat prolonged expiration; no râles; no change in fremitus. Heart: Area of dullness not increased; sounds very faint; no murmurs heard; aortic second increased.

Abdomen: In the epigastric region, just above the umbilicus, is felt an oval tumor about 3 x 1½ in. in size; this tumor pulsates and is slightly tender. Liver not enlarged. Spleen not palpable.

Knee jerks present; normal plantars; no Babinski. Varicose veins of both legs.

Urine: 1,018; color, normal; acid; albumin, 0; sugar, 0.

Diagnosis: Arterio-sclerosis; varicose veins; aneurism of the abdominal aorta.

May 11, 1904. Patient complains of same symptoms in back, otherwise his general condition is fair.

May 13, 1904. Last night he fell out of bed, after which he vomited blood and also passed considerable blood by rectum. He felt weak, but the pulse remained of good quality. This morning he is comfortable.

May 16, 1904. No subsequent vomiting, and after twenty-four to forty-eight hours the stools again become normal. There are no gastro-intestinal symptoms. He is very weak and appears somewhat anemic. Patient felt very comfortable up to five o'clock this morning when he suddenly collapsed and remained unconscious until his death at 5.30 P.M.

AUTOPSY No. 04.33 (708), regular No. 20,097. May 17, 1904. Dr. G. B. Magrath.

ANATOMICAL DIAGNOSIS.

Chronic adhesive pleuritis.
Chronic tuberculosis of the lungs.
Emphysema of the lungs.
Edema and congestion of the lungs.
Hypertrophy and dilatation of the heart.
Chronic interstitial myocarditis.
Chronic perisplenitis.
Cholelithiasis.
Chronic nephritis.
Multiple aneurisms of abdominal aorta with
Ulceration of the duodenum and
Hemorrhage into the stomach and intestines.
Fatty degeneration and necrosis of the psoas muscle.
General arteriosclerosis.
Aneurism and dilatation of the aorta.
General anemia.

Body: That of a man eighty-one years of age; length 165 cm.; well-developed and fairly well nourished; rigor mortis present; faint post mortem lividity of dependent parts; thorax barrel-shaped; pupils equal, .3 cm. in diameter; arcus senilis; the dorsum of the left hand, near the base of the thumb, presents a horny elevation about 1 cm. in diameter; the right shin presents a copper-colored area of pigmentation, about 5 cm. in diameter. Upon section, subcutaneous fat .3 cm. in thickness; muscles red and thin; vermiform appendix and mesenteric lymph nodes normal.

Thorax: Height of diaphragm fourth rib on right side, fifth on left.

Pleural cavities: Both present a few old fibrous adhesions, chiefly at their apices.

Pericardial cavity: Contains about 25 cc. of clear serous fluid.

Heart: Weight, 350 gm.; epicardial fat fairly abundant; upon section, myocardium brown red, a patch of about 1.5 cm. in diameter, of the wall of the left ventricle near the aortic valve, white and fibrous. Wall of left ventricle 1.3, of right .4 cm. in thickness. Mitral valves 10.5, aortic valve 9, pulmonary valve 8, tricuspid valve 12 cm. in circumference. Depth of left ventricle 9.5 cm. The curtains of the aortic valve somewhat sclerosed at their bases; cavities a little dilated; the tips of the papillary muscles white. Coronary arteries upon section, sclerotic, considerably calcified, and somewhat dilated in the upper part of their course; the descending branch of the left, 3 cm. from its origin, considerably narrowed.

Lungs: In general alike; voluminous; the fronts gray and downy, with moderate carbon pigmentation; the backs bluish red, of slightly increased consistence and faintly crepitant; at the apex of each is an area of induration, with puckering and some calcification; the lower lobe of the left lung, in the mid axillary line, near its apex, presents a puckered scar 3 or 4 cm. in length, beneath which is an area of induration, which, upon section, shows two areas, elevated, irregularly oval, about .8 cm. in diameter, gray, homogeneous, dry, and very faintly granular; in the vicinity of these areas are a few vague nodules 1 to 2 cm. across; the back of the lung dark red and moist, the front gray and fairly dry; bronchi contain brownish mucus. Right, in general similar to the left; upon section, the posterior part red, of somewhat increased consistence and leathery.

Abdomen: Peritoneal cavity normal.

Spleen: Weight, 120 gm., attached to parietes by fibrous adhesions; capsule presents nodular thickening; upon section, homogeneous, brick red; consistence soft; pulp increased.

Stomach: Distended with fluid contents; length 29, depth 15 cm.; upon section, contents consist of semi-fluid and partially clotted blood; the largest masses of clot about 15 cm. in diameter; volume of the contained fluid about 1,200 cc.; mucous membrane negative.

Intestines: The duodenum and the greater part of the ileum are moderately distended with dark red semi-fluid and partially clotted blood; the third portion of the duodenum in the median line projects forward, apparently overlying a vague, irregular mass about 7 cm. across, the overlying peritoneum somewhat thickened. Upon section at this point the duodenum presents on its posterior wall an opening 2 x 1.5 cm., which upon pressure yields a small amount of gray red clot; the edges of this opening are rounded, somewhat irregular, and drawn downward. Upon further dissection this opening communicates with a sac partly filled with blood clot, and in continuity with the aorta through an opening in the anterior wall, 4.5 x 3 cm., the long axis vertical, the edges rounded and infiltrated; the intervening sac about 5 cm. in diameter, its inner surface overlaid with laminated clot; the cavity for the most part empty; a probe inserted into the opening in the duodenum enters this cavity obliquely. Adjoining this sac and communicating with the aorta is an oval opening 3 cm. in diameter. To the right of and in continuity with the opening in the aorta already described, is another cavity about 4 cm. in diameter, lined with laminated mixed clot, bounded in front by the inferior vena cava, behind by the lower lumbar vertebræ, and externally by the psoas muscle; this cavity is for the most part empty. This muscle is pale brown, streaked with yellow and mottled with areas of necrosis and hemorrhage in its lower and back part.

Pancreas: Negative.

Liver: Weight, 130 gm.; surface smooth; pale brown; upon section, lobules faintly visible; cut surface anemic; consistence normal.

Gall bladder: Upon section, contains numerous calculi, in size varying from .3 to 2 cm. in diameter, the larger grayish yellow and faceted, the smaller black or yellow; one of the larger lodged at the origin of the cystic duct; the gall bladder contains a small amount of clear mucoid fluid; its walls 2 to 3 cm. in thickness.

Kidneys: Weight of both 340 gm.; capsule slightly adherent to a faintly granular surface; upon section, pale gray red; cortex .6 cm. in thickness; glomeruli faintly visible; pyramids nearly white; consistence tough; pelvic fat somewhat increased. The right kidney near the hilus shows a cyst cortical in position and about 2 cm. in diameter.

Adrenal glands: Normal.

Bladder: Contracted.

Genitalia: Prostate 5.5 cm. in transverse diameter; upon section, the right lobe shows a lobulated elevation 1.5 cm. across, bordering upon the urethra; otherwise negative.

Aorta: In addition to the aneurisms above described which lie 4 cm. below the renal arteries, the organ presents marked arterio-sclerosis with dilatation; the circumference at the level of the pelvic axis 6.5 cm., in the middle of the thoracic segment 8 cm.; at the level of the left subclavian artery, 7.5 cm.; the inner surface marked by alternating areas of elevation and depression, the latter calcareous, the former in some instances soft; on section, containing mortar-like substance, and overlaid with fragile thrombi; many of the areas are ulcerated.

Cranium: Sinuses and dura normal.

Brain: Weight, 1,180 gm.; notably anemic; the vertebral and basilar arteries marked by a few small, yellow plaques; the internal carotids extensively calcified; otherwise negative.

Spinal cord: Not examined.

From the onset in the above case, the diagnosis of abdominal aneurism was clear as also the origin of the malena and hematemesis. But very few cases are to be found in the literature of ulceration from an abdominal aneurism into the duodenum. In the above mentioned statistics of Huchard[9] of 250 cases of aortic aneurism, in only one instance was there rupture into the duodenum. The relatively long interval (four days) between the initial and fatal hemorrhage is further noteworthy. Bailey[10] records a case of abdominal aneurism with ulceration into stomach which death took place three days after the first evidences of hemorrhage. The extreme age of the

[9] Huchard: *Loc. cit.*
[10] Bailey: Brit. Med. Journ., 1891, 2, p. 76.

patient (eighty-one years) is exceptional. On this point Camac [11] gives statistics based upon 340 cases of aneurism collected from the literature. The maximum number, 102, or 30%, occurred during the decade 31 to 40, with each succeeding decade diminishing very rapidly until 71 to 80 is reached, when there were but 3 or .9%. After 80 there were none. The complicating tuberculosis of the lungs suggests also the question of any possible relation between the two conditions. Camac [11] in his study of 340 autopsies on aneurism found 16% in which pulmonary tuberculosis was present, and therefore believes the relation to be a definite one.

SOME REMINISCENCES OF THE HARVARD MEDICAL SCHOOL OF FORTY YEARS AGO.*

BY DAVID COGGIN, M.D., SALEM, MASS.

On the first Wednesday in November, 1865, the medical lecture room of the Massachusetts Medical College, on North Grove Street, Boston, was filled with physicians and students.

On the platform were seated Dr. Thomas Hill, the president of Harvard, the revered and venerable Dr. James Jackson, the oldest living professor *emeritus* of the University, and the members of the faculty of the Medical College.

The introductory address, on "The Relations of Health and Disease," was given by Dr. Calvin Ellis, who had recently been appointed adjunct professor of clinical medicine. (Two years later he was made professor, which position he amply filled till his lamented death in 1883.)

The senior class was the largest in the history of the school, as one hundred members were graduated in the following June. Several had been serving in the army during the Civil War, which had ceased only six months previously.

One, at least, was said to have received the thanks of Congress for valiant conduct on the field of Gettysburg. Some of these young men, of bronzed faces and erect figures, still wore clothing that indicated their recent military life.

In the senior class one fifth of the members held the degree of A.B. Probably other students could have passed the entrance examinations of that day at either the Colleges of Physicians or Surgeons or Apothecaries' Hall in London, but the standard of preliminary education of most of the students was then doubtless much lower than at present.

The college building was comparatively new, having been built in 1846 on land given by Dr. George Parkman. An old prospectus says: "It is 134 feet long by 60 broad and contains spacious lecture rooms," and "in a quarter of the city highly convenient for the lodging of students."

After the introductory lecture the students secured their tickets — one from each of the eight professors — for which they paid a total sum of $85 and $3 for matriculating and, if they chose, $5 for the demonstrator's ticket. Of all the professors and instructors who were then connected with the school but two survive, the former professors of surgery and dermatology. The instruction at that time was mainly by lectures.

Visits were made by students at the Massachusetts General, City and United States Marine hospitals, the Massachusetts Eye and Ear Infirmary and the Boston Dispensary on four mornings in the week. Lectures were given on two mornings of the week at eight o'clock by Dr. E. H. Clarke on Materia Medica. Even at that early hour the medical lecture room was well filled, owing to the interest with which Dr. Clarke invested a confessedly dry subject. He had a reputation as an aurist, which was enhanced later by his monograph on "Polypus of the Ear." He and Dr. D. H. Storer alone lectured in dress coats, after the custom of the professors of *l'école de médecine* in Paris.

Dr. Storer prefaced his lecture by a quiz, in which the senior students on the front seats took part.

A buckskin-covered manikin was used in illustrating the stages of parturition. Doubtless some students graduated without having had a case of labor (as was true of the reader).

Dr. J. B. S. Jackson gave two lectures weekly, one of which was in the Warren Museum.

The pathological specimens were his treasures, and the fond tenderness with which he handled them and the keen interest which they evoked, as shown in his classical features, is readily recalled.

One morning while he was lecturing, a student snapped a wad of paper which struck Dr. Jackson. He rose from his chair, his face pale, and started for the door, but he turned back and quietly said, "Gentlemen, I hope that will never occur again," when he resumed his lecture.

Dr. Henry J. Bigelow lectured on various surgical subjects, from aneurism to strabismus, on three mornings of the week. In the lecture of Monday he very likely would refer to the cases operated upon the preceding Saturday, reading from the case-books brought by the house officers (all of whom later became professors in the medical school). He always had a large audience. One morning he abruptly asked if we had heard the latest news from over the water, saying, "Why is cold like an attorney?" "Because it draws up the marriage articles." He will long be remembered for his discovery of erectile tissue in the nose, for his operation of litholapaxy, and for his treatise on "The Hip," with its fine woodcuts.

Dr. John Bacon lectured twice weekly in the clinical lecture room, in which a tragedy had been enacted not many years before. He was a gentleman of suave and deprecatory manner, whom the students frequently annoyed by throwing missiles against the furnace pipes and by applauding his experiments most vociferously.

During that winter, for the first time, lectures on clinical chemistry were given, in a dark and contracted room in the Massachusetts General

[11] Camac: *Loc. cit.*

* Read at Lynn, Oct. 10, 1905, before the Essex South District Medical Society.

Hospital, by Dr. James C. White, adjunct professor of chemistry. These lectures were decidedly popular, as the large attendance at the early hour of 8.30 testified.

Dr. Henry I. Bowditch, always fervid and sympathetic, gave a clinical lecture on Saturday mornings. A case of empyema is recalled when Dr. Wyman's pump was used. This was before the introduction of the French aspirator.

Dr. George C. Shattuck, kindly and courteous, whether being interviewed as dean by a student or when questioning some forlorn patient in the hospital, was the professor of the theory and practice of physic. His manner in the delivery of lectures reminded one of a Paris professor. The work of his department, like that of others, has been much divided since his day. At present, for example, the professor of theory and practice no longer offers Dr. Good's nomenclature, nor does he lecture on diseases of the skin.

After sitting for five long hours (on some days) on hard benches (and longing for the rumored cushioned seats of the Twenty-third Street school in New York), at one o'clock, on five days of each week, there was yet another lecture to live through — that on anatomy, by the genial Dr. Oliver Wendell Holmes.

Two pairs of stairs led to the anatomical theatre. The right-hand flight was frequented largely by young gentlemen of somewhat boisterous proclivities from the maritime provinces. It afforded them apparent enjoyment to push each other down the stairs while waiting for the sounding of the gong that indicated the opening of the doors. The more decorous and quieter students were wont to mass themselves on the left stairs. At the close of the lecture the students availed themselves of the somewhat unique collection of microscopes on an adjoining table and looked at the slides. The Autocrat's successor described most graphically the routine life of his old instructor in the medical school (in *Scribner's Magazine*, January, 1895).

No clear recollection is retained of the few lectures on physiology given by Dr. Holmes later in the session. Suffice is it to mention that the course by Dr. Austin Flint, Jr., in the following spring at the Long Island College Hospital (where some of the students went on the close of the four months' course, instead of attending the spring recitation term in Boston), was to me a revelation of the new method of teaching physiology.

Dr. Charles E. Buckingham (son of the Hon. J. T. Buckingham), whose name is associated with that of Homer Wilbur, A.M., in Lowell's "Biglow Papers," a surgeon at the new City Hospital (where he once showed the class a successful excision at the knee joint), had recently been appointed adjunct professor of the theory and practice of medicine. His lectures on the diseases of children were eminently practical and they were largely frequented. Later he was professor of obstetrics for nine years, when death cut short a most useful career.

The eye clinic at the City Hospital was held on Friday by Dr. Henry W. Williams, and was well attended (in the basement of the western pavilion). The following year Dr. Williams was made university lecturer on ophthalmology and a year later Dr. Hasket Derby was appointed a lecturer. (Possibly the appointment by the University of Doctors Buckingham, Cheever and Williams to positions in the medical department prevented the opening of another school at the City Hospital?)

Mention should be made that clinical medicine was also taught in the afternoon at the Massachusetts General Hospital by Drs. S. L. Abbott and R. M. Hodges, and Dr. J. E. Tyler lectured on Practice each week.

Dr. David W. Cheever, the demonstrator, met students at 5 o'clock daily in the dissecting room. The entrance was in the left basement. On the right of the door was a small room to which a few fortunate owners of microscopes resorted. Lockers extended along the sides of the passage northward. Near the great furnace was the trap-door over the sewer — both of gruesome memory.

The dissecting room was most noisome as compared with the one of to-day. My first part was the head of a negress. I recall with admiration (mingled with envy) the dissection of the abdominal muscles made by a student who, later, was an instructor in the school and a surgeon in the Massachusetts General Hospital. The operations at the City Hospital (then consisting of only the central building and the two pavilions) were largely attended on Fridays.

The surgical lectures by Dr. Cheever in the operating theatre beneath the dome were well worth the long walk from the school in wintry weather.

Saturday was the chief day for operations at the Massachusetts General. The old operating-room under the dome, with the Apollo and the mummy case on either side, had not been changed since the first operation under ether was performed there less than a score of years before, the news of which soon went round the world.

The blue frock coat, buttoned high and well spattered with dried blood, worn by the professor of surgery, is, after the lapse of so many years, vividly recalled. The other surgeons — Cabot, Warren, Gay, Hodges and Clarke — when present also donned their old coats if they were to operate.

The amphitheater and the instruments seemed clean, but the number of deaths following operations was simply appalling.

Pyemia was a *bête noire* in those days, as was also septicemia. Then, as probably to-day, students from across the Charles occasionally were present and, not infrequently, they became faint and had to be carried out. Occasionally notice was sent to the school that an afternoon autopsy would be held in the somewhat insignificant dead house, near the students' entrance to the hospital. Depending on the mood of the superintendent, students would either pass through the open gate or else climb over the fence that separated the college from the hos-

pital grounds. One of the house officers directed the post-mortem, but the procedure was hardly like that seen later, under the teachings of the lamented Virchow and Cohnheim at the Charité. The little room was filled to its capacity, however, and much valuable instruction was offered.

Forty years ago there were less than a score of instructors connected with the school, while today the number is sevenfold greater. With the completion of the new buildings and with the greatly augmented facilities for study and research that they will afford, it seems as if this school will be almost without a peer in this country — at least the contrast between the old Massachusetts Medical College and the new Harvard Medical School will be very striking.

Clinical Department.

A CASE OF PYLORIC STENOSIS IN AN INFANT FOURTEEN DAYS OLD. OPERATION. RECOVERY.

BY CHARLES W. TOWNSEND, M.D.,
Physician to Out-patients, Massachusetts General Hospital,
AND
CHARLES L. SCUDDER, M.D.,
Surgeon to Massachusetts General Hospital.

The patient, Edward W., two weeks old, was seen in consultation by Dr. Townsend with Dr. G. L. West of Newton Centre on July 14, 1905. Of healthy parentage, the infant appeared at birth to be strong, and well-developed, weighing 10½ lbs. As the mother was unable to nurse, the infant was artificially fed. It was first given a home moidfication containing about 2% fat, 4% sugar and .80% albuminoid. As the infant vomited this, the strength was weakened from time to time, yet, even when nothing but water was given, the vomiting continued. The history of this sign was as follows: Sometimes during a feeding, the food would be ejected from the stomach; sometimes the vomiting would not occur until just before the next feeding; sometimes there was a quiet time over two feedings and then the accumulation would be ejected. The character of the act varied; it was sometimes a gentle regurgitation, sometimes sudden and projectile. The vomitus itself consisted always of the food taken, once only some mucus, never any bile. It was apparent that nearly all the food given was returned.

The dejections were one, sometimes two, daily, very small, yellow, and, at times, dark like meconium. The infant did not appear to be very hungry and cried but little. It had steadily lost weight from birth, weighing at the time of my visit 8 lbs. 4 oz.

On physical examination there was a distinct feeling of fullness in the region of the stomach. The stomach seemed to be distended, while the rest of the abdomen was flaccid and depressed. These signs, together with the symptoms and the fact that it had been judiciously fed, seemed so suggestive of a congenital pyloric stenosis, that Dr. Scudder was called in consultation.

The operation of posterior gastro-enterostomy without a loop was performed with clamps and suture by Dr. Scudder. At operation the stomach wall was found distinctly thickened. The stomach itself was not greatly distended, although larger than normal at two weeks.

A pyloric tumor, hard, rounded, symmetrical and non-adherent to the surrounding parts was palpated and observed. The tumor was about the size of the end of the thumb, five-eighths by seven-eighths inches.

The intestine below the pylorus was small and partly collapsed.

The child showed little, if any, shock from the operation.

The after history of the case is uneventful. Within twelve hours after the operation feeding was begun with weak modifications. These were gradually increased in strength and the infant did well. There was no return of the vomiting after the seventh day. The infant gained rapidly in weight, but was much reduced by milk poisoning in August. It is now at the age of five months, gaining again.

This case is of peculiar interest in that the child is the youngest on record upon whom a successful operation for pyloric stenosis has been performed.

A NEW (?) ANATOMICAL STRUCTURE.

BY GARRY DE N. HOUGH, M.D., NEW BEDFORD, MASS.

It seems hardly possible that at this late day any gross anatomical structure in the human body can have escaped observation and description. It is, therefore, with a good deal of hesitation that I venture to offer this paper for publication. Certainly, neither the structure nor its value to the operating surgeon is commonly known. For several years I have been in the habit of demonstrating it to my house surgeons and explaining to them its value.

The structure in question is a fold of peritoneum in the right iliac fossa. It is a guide to the apex of the cecum and to the base of the appendix.

It begins at a rather indefinite place not far from the anterior superior iliac spine and runs transversely, right straight across the iliac fossa, to the cecum to which it is attached just at the base of the appendix. It is half an inch to an inch high and slants upward toward the liver like a fence blown half over by a heavy wind. It is on account of this slant, in all probability, that it is not a well-known landmark. The reason is obvious. Most of us, after opening the abdomen, use the index finger of the right hand for exploration and with this finger the fold cannot be easily felt unless (which seems to be rather unnatural) one begins above and passes the finger downward along the iliac fossa. If, however, one uses the left index finger for exploration and, with the palm of the hand turned toward the feet of the patient, sweeps along the floor of the iliac fossa, the first thing one strikes is this peritoneal fold. Follow it and it leads you at once to the apex of the cecum and base of the appendix, your finger naturally hooks under the longitudinal band, and you can pull the cecum out.

In ordinary cases the use of this guide enables one to get along with an incision just big enough

to introduce one finger. It permits one to get hold of the cecum first, and not, as I have many times seen happen, bring out first small intestine, then the transverse colon or the sigmoid, and only after a good deal of searching find what one really wants.

Even when a big incision is required, on account of adhesions or pus, or by a post-cecal, retroperitoneal or other unusual position of the appendix, I still find this guide of value and often of very great value. Occasionally it is obliterated by inflammation and adhesions. In very fat patients it is sometimes thick and difficult to make out because one's finger, instead of striking the "fence," merely slides over a rounding hillock.

Medical Progress.

REPORT ON MENTAL DISEASES.

BY HENRY R. STEDMAN, M.D., BROOKLINE, MASS.

THE PERSISTENCE OF THE NERVE-FIBRILS IN GENERAL PARESIS.

J. DAGONET [1] has demonstrated by Ramon y Cajal's new method of staining by reduced silver that the nerve-fibrils persist in general paresis and present the same characters as in the normal state. This persistence of the fibrils explains certain remissions in paretics who after remaining for months in a condition of complete dementia suddenly emerge from it and recover their recollection of things and their consciousness. From a general point of view the integrity of the nerve-fibrils when the nerve cells are themselves so much altered — and he has established in his preparations the common and multiple lesions of general paresis by the Weigert and Nissl methods — goes to show that the nerve cell is not a trophic center for the nerve-fibrils, the latter having their independence apart from the nerve cell and that the objections recently made to the neuron theory are well founded.

THE CHILDREN OF GENERAL PARETICS.

Semper [2] finds that the prognosis as regards the physical health of the children of general paretics depends entirely on the date of the syphilis: the more remote the infection the greater the chance of life for the children. The children of mothers already affected by paresis come into the world under infinitely better conditions than those whose mothers have been recently infected by syphilis. As regards mental health the prognosis depends before everything else on the presence or absence of hereditary predisposition to insanity, paresis in itself counting for very little.

DIABETIC PSEUDO-PARESIS.

Ingegnieros' [3] studies and observation of diabetics lead him to the following conclusions: Diabetes causes both mental and nervous disorders. All the various bodily and mental symptoms which go to make up the syndrome paresis have long been separately observed and reported as the results of diabetes. A diabetic auto-intoxication attacking simultaneously the different regions of the nervous centers, which can cause the symptoms of paresis ought to manifest itself by this symptom-group. This diabetic paresis in its clinical evolution assumes different forms: (1) It may be accidental in its occurrence and disappear quickly. (2) It may remain stationary until treatment directed to the cause of the diabetes is employed. (3) It may take a progressive and incurable course. In the first case we should then have "an accidental paretic syndrome," in the second "a diabetic pseudo-paresis" and in the last "a progressive diabetic paresis." The "diabetic pseudo-paresis" is an actual clinical fact and should be added to the other forms of "pseudo-paresis" ("syphilitic, arthritic, alcoholic and plumbic").

[1] Annal. Medico-Psychol., January and February, 1905.
[2] Thèse de Paris, November, 1904.
[3] Revue Neurologique, July, 1905.

THE CURABILITY OF EARLY PARESIS.

Dana [4] suggests that paresis, like tabes, — with which it is closely related as a parasyphilitic disorder, — may be arrested in its earlier stages. By "arrested" he does not mean the well-known remissions of the disease; in these, he says, there still remains a certain amount of paretic mental impairment, but he rather means a complete disappearance of all evidence of degenerative changes in the brain. He reports a number of cases illustrating his contention, in which symptoms decidedly indicative of paresis appeared, characteristic mental changes, convulsions, Argyll-Robertson pupil, etc., but which disappeared under treatment and the patients remained well for various periods under observation. The treatment generally consisted in complete change of life, antisyphilitic medication, preferably hypodermic, hydrotherapy and attention to general nutrition. He says there is no *a priori* reason why paresis in its early stages may not be sometimes cured, and he holds that the cases he here reports point that way and indicate the importance of an early diagnosis and treatment of this disorder which has been heretofore considered incurable.

MENTAL DISTURBANCES DURING CONVALESCENCE FROM TYPHOID.

Roget [5] in a careful study of eighty-nine collected cases including three of his own, relative to this complication, whether originating in convalescence or arising during the height of the fever, finds that the mental disturbance is always an auto-intoxication psychosis which in the majority of instances possesses certain special characteristics and has a pathogeny and physiognomy which are peculiar to typhoid cases. According to him the special and most common form assumed is a symptom-group of delusional ideas confined to a single object or idea (*conceptions délirantes fixés*) and are often of an ambitious, expansive nature. They are easily corrected

[4] Journ. A. M. Assn., May 6, 1905.
[5] Annal. Med. Psychol., 1905, Nos. 1, 2, 3.

and of short duration, the patient making a good recovery, conditions not met with in true insanity. As a rule, they follow attacks of typhoid that are mild or of medium intensity. Their average duration is eight to fifteen days, sometimes less, rarely more. Next in order of frequency come, as a second group, the different types of mental confusion, then mania, hallucinosis, disturbances of memory and finally melancholia. Quite frequently there is a succession of several forms in the same patient. Exceptional cases are reported in which the complication was general paresis (*sic*) *folie du double*, *folie circulairie* and moral insanity. Heredity predisposition plays a secondary rôle, the typhoid toxin being the principal factor. The cases of the first group always recover and those of the second frequently — from 71.8%, according to Kraeplin, and 84.12% of those collected by the writer.

THE INTERRUPTION OF PREGNANCY IN MENTAL DISEASE.

Wagner de Jauregg[6] believes that the coexistence of insanity and pregnancy constitutes a most unfavorable condition, because 60% to 70% of the psychoses occurring in the course of pregnancy are never cured and because pregnancy occurring during an attack of insanity aggravates the danger of chronicity. This being the case the question arises: Is not artificial interruption of pregnancy indicated as a means of improving the mother's condition? This he would answer negatively as a general rule, first, because normal labor has no influence on the evolution of insanity unless it be an unfavorable one and also because the complications likely to arise through such intervention itself may make matters worse. The exceptions to this rule are: (1) When ideas of suicide exist which are likely to be dispelled by intervention. (2) When the patient has delusions relating solely to her condition of pregnancy, *e. g.*, hypochrondriacal ideas, fear of giving birth to a monstrosity, fear of the labor, etc.

ACUTE FATAL PSYCHOSES.

Weber[7] finds that in contrast to acute delirium there sometimes occurs a symptom-complex beginning acutely either in health or in the course of chronic psychoses, which is characterized by depression and the catatonic symptom-complex. It is either impossible to arouse the patient or else he shows automatic response to commands. Death occurs without any apparent impairment of nutrition or the presence of any infectious disease, excepting possibly an agonal pneumonia. He reports 5 cases of this condition, all characterized by almost complete lack of objective symptoms, either in the form of paralysis or cortical irritation. There was no fever, but apparently defective circulation, because the hands and feet were cyanosed although the heart's action appeared to be good. The chief psychical symptom was inhibition. The patients sometimes showed a considerable degree of anxiety. Nutrition was well maintained in all, but death occurred in all cases after a relatively short interval. In case 1 death occurred forty-six days after the first symptoms; case 2, thirteen days; case 3, four months; case 4, eleven days, and in case 5, sixteen days. Three of the cases were associated, respectively, with epilepsy, general paresis and senility. Two of the cases Weber regards as pure functional psychoses. In none of the cases were any significant changes found in the central nervous system. Weber does not regard this symptom-complex as the expression of a disease process uniform either etiologically or anatomically. There is probably often some primary psychical defect. The predisposing causes are, among others, injuries and neuropathic heredity. The vascular changes resemble in some respects those of acute delirium.

[6] Wiener klin. Woch., t. xviii, No. 10, March, 1905.
[7] Monatsschrift für Psych. und Neurol., vol. xvi, 1904.

Reports of Societies.

AMERICAN CLIMATOLOGICAL ASSOCIATION.

REPORT OF THE TWENTY-SECOND ANNUAL MEETING OF THE AMERICAN CLIMATOLOGICAL ASSOCIATION HELD AT DETROIT, MICH., JUNE 29, 30, 1905.

(Continued from No. 23, p. 650.)

DR. NORMAN BRIDGE, of Los Angeles, Cal., read a paper on

IMPALPABLE SPUTUM AS A USUALLY OVERLOOKED DANGER IN TUBERCULOSIS.

Dr. Bridge holds that hereditary infection is not responsible for tuberculosis to any very great extent but that the infection of children is usually by bacilli which are taken into the mouth in inspired air and in substances handled, and then swallowed. Some of these bacilli are doubtless gathered upon the hands from the floors and ground upon which children live and play. Infection in the young adult usually dates back several years, beginning in the lymphatics long before the lung symptoms appear. In this he agrees with von Behring.

A positive menace to the well are the intangible, minute particles of tuberculous sputum ejected by the consumptive with an explosive cough, and which falls on clothes, furniture, floors, rugs and carpets. The sputum is pulverized, is distributed by the air and constitutes a formidable danger because neglected and unthought of. The experiment of L. N. Boston, Goldin, Flügge and de Leon and Alice Hamilton were quoted to prove this point. The most dangerous forms are the sputum caught on the beards and moustaches; next the intangible sputum ejected by the explosive cough. These forms are very rarely destroyed, not receiving any consideration. A crusade should be started against this peril and the means to be adopted will involve more attention, carefulness and labor than we now bestow on tangible sputum. Dr. Bridge advocated shields when coughing, the removal of beards and moustaches from the patients; the sterilization of rugs and clothes and bed coverings by exposure to the sun's rays a few hours each day when possible, or else hung in a formalin closet. Simple furniture was suggested. Whatever methods are best and most practicable should be employed.

DR. R. H. BABCOCK: While we all recognize the importance of the subject, we are equally appalled by the difficulty of carrying out the measures proposed. I would like to ask Dr. Bridge, if he were treating a millionaire, if he would have his patient sit on a wooden chair covered with soft layers of blankets. These measures can be carried out in a sanitarium, in hospitals and largely in lodges and habitations of the poor. But when we come to the treating of people who are accustomed to the luxuries of life we simply are met by a stone wall of custom and opposition which we cannot surmount. And, therefore, it seems to me that really the only practical thing which we can recommend, imperfect as it may be, is that the patient hold a handkerchief in front of the mouth when coughing. Previous experiments have shown, as the doctor says, that there is a danger zone of about a yard, or arm's length, surrounding the body of the patient. But as Cornet remarks, the danger is really not quite so great as the danger from dried sputum. The danger does not exist to the same extent in certain cases. In early tuberculosis the amount of sputum ejected is small, and if the patient has an apparently dry cough, he probably is not ejecting anywhere near as great a number of bacilli as we might assume. Whereas, in the the more advanced cases when pulmonary softening and destruction are taking place rapidly then the bacilli are ejected in invisible droplets. The danger of infection in the room occupied by the patient is greatest to those who stay in the proximity of this patient for any great length of time, or who may occupy such a room afterward, when it has not been properly cleansed. If the room be thoroughly ventilated, and the patient hold some protective material, as a handkerchief, in front of his mouth when he coughs the probability is, as remarked by Flügge, that the danger is minimized, so far as we are now able to minimize it. And the danger does not greatly affect those who come in contact with the patient for a short time. I am not willing for a moment to minimize this danger. I believe we must recognize it. We must teach our patients to recognize it, but if we are going to exercise any control over the average patient, we cannot surround him with restrictions which are tantamount to putting him in jail. Theoretically and practically we would like to carry out all these measures, so far as possible, but as we cannot, we must merely use those which are least harmful, and then the patient will be most likely to follow our instructions, and I believe that to be protecting the mouth in the act of coughing.

DR. W. C. GLASGOW, of St. Louis, took a very conservative position with reference to the communicability of tuberculosis and related hardships which persons who had tuberculosis suffered. He also spoke of the folly of exposing advanced cases to the hardships of travel to distant places like California.

DR. E. L. SHURLY, of Detroit: Certainly the precautionary measures suggested are interesting, but the question is whether they can be carried out practically or not. I feel very conservative about this question of coercive action, and would reserve my opinion until further developments. I would not treat with lightness the experimental evidence extant, but am convinced that many cases of pulmonary tuberculosis are not as virulent or communicable as many believe. I base this on clinical evidence which does not certainly show pulmonary phthisis to be highly communicable. It is largely upon incomplete evidence that such a view is taken. We do not know the life history of the tubercle bacillus outside the body, and we haven't as yet accurate scientific statistics regarding the disease. I do not think we can ever have accurate statistics until we can have cases reported to a commission of physicians. I do not think that we know as yet how much a part dust, appurtenances, etc., play in the distribution of disease. Nor what forms of the disease are communicable. There has not been enough experimentation or experience with dust to justify practical conclusions. We do not know yet whether the tuberculosis bacillus is a complex body, so to speak, whether there are several forms, stages of development or families. Koch has already pointed out that bacillus found in bronchial glands does not conform strictly to identification tests. He thinks it may be a premature form of the bacillus. It seems to me, therefore, that we should be more conservative in our opinions. I am in favor of taking every precaution, and in giving the theory of communicability the full benefit of every doubt, but at the same time restraining ourselves from radical efforts along the people looking to isolation, until we find a greater percentage of cases arising from undoubted communicability than the sixty years' experience, with tuberculosis has shown. It is very difficult to put a man on a regimen as we would like, including isolation or pauperization. This I think is a condition which must be admitted, especially as we know that the tubercle bacillus does not attack healthy tissue. Still another thing challenging our attention and calling for still further observation is the question whether the tubercle bacillus, like the streptococcus and staphylococcus, have not the same life history and saphrophytic existence. It has been found, I believe, that streptococci are always around in the soil and in appurtenances, and that the typhoid bacilli are present in stagnant pools in every state of the Union, in latent states possibly. Therefore, I think, while I do not deny to have observed what seems to be unmistakable evidence of communicability in some families, that clinical experience is still lacking to convince one of its general communicability.

DR. INGALS, of Chicago: There is no doubt but that it is a good plan to prevent the dissemination of the bacilli, but whether the infection comes from persons suffering from tuberculosis is uncertain, and I think it very doubtful whether the plans suggested are practicable or feasible. As Dr. Shurly suggested, we do not know the life history of the bacillus, we do not know where it comes from. To assume that all of these bacilli come from tubercular people I think unjustifiable. Dr. Nägeli, of Zurich, found that out of 500 bodies examined, 97% contained bacilli. In children under one year of age he did not find any that had bacilli and in children less than six years of age only half had the bacilli. The chances are that every adult harbors the bacilli in some part of his body. I think the clinical experience shows that very few people contract tuberculosis from coming in contact with persons suffering from it. I have over two thousand careful records of private tuberculous patients, and I am confident that less than 2% of them show any evidence of contagion. I, of course, recognize that the disease is contagious, but I believe the danger is very slight and there is great danger, I believe, of unnecessary alarm or panic. Many are getting over the panic to a certain extent as they have learned something; but a few years ago they would scarcely eat meat, for fear the animals were tuberculous. Then they were afraid to drink milk.

DR. ROCHESTER, of Buffalo: I want to place myself on record as being decidedly not in sympathy with Dr. Glasgow and his adherents, but, on the other hand, I do think that Dr. Bridge has gone to an extreme in regard to the impalpable sputum. While impalpable sputum is dangerous to a certain extent, it is relatively of little importance, and that the greatest danger is from the sputum of advanced cases, and the cases that are so largely uncontrolled.

Dr. Swan, of Colorado Springs: When we consider the larger number of healthy adult people who have given evidence of past tubercular infection, and when we consider that probably all of us come within the zone of infection and that the chief weapon we have against tuberculosis is in keeping our vital energies on as high a plane as possible, we cannot agree with all the opinions that have been expressed here to-day. That really our chief weapon in keeping well must be the same weapon that gets people well of the disease, and it seems to me that we should at all times make that a point for the laity to consider, more than the question of the infection by sputum. Of course, we ought to teach them to avoid in every way possible danger to others from their sputum. But if we emphasize that part of the question too much we get them panic stricken, and, therefore, they overlook what is undoubtedly of greatest importance. Then, too, in taking the histories of our patients with tuberculosis, in almost every case, we find that they have become ill after either some physical or nervous depression or knock-out; and in all probability, if this had not occurred, they would not have become sick of tuberculosis. Among cases of active tuberculosis many arise, not from recent infection, but from an old latent infection that has existed, perhaps, for years, and because the person has become run down and his vital powers much below par, he has yielded to the disease which he had previously successfully combated.

Dr. S. D. Risley, of Philadelphia: The fact that there are two opposing claims in this society is but an evidence that the actual truth of the question under discussion is not open to absolute demonstration. If there is a grain of truth in the danger from impalpable sputum, I contend it is the duty of this society, it is the duty of the medical profession, to teach that truth to the community. To my thinking the most valuable asset of the medical profession is its power as an educational institution. But no political, no social, no moral reform ever took place that did not give rise to more or less panic. And we cannot help the fact; this society should not stand in the way of the truth because other people are frightened or distressed. It is our duty to say that it is true, no matter what the results are. In all reforms somebody suffers. I say the man who turned that woman out of his household for the protection of his young children did right. It was his duty to those intrusted to his parental care. I would have done it. But it is the duty of the community to see that there are asylums for such people. Concurrently with the course of the reform should come the hand of charity to take care of those who cannot take care of themselves.

Dr. H. L. Taylor, of St. Paul: To teach a half truth is very much more dangerous than to teach nothing. We have taught the public the danger of transmission of tuberculosis; don't let us teach them these refinements before we know exactly how much truth there is in the suppositional danger from these small particles of sputum that may be thrown around by the coughing and talking of the patient. The public have some rights that even the members of the profession are bound to respect though many of them do not seem to think so. We have no right to inculcate them with still further fear of this disease when we do not know positively ourselves whether or not the disease is transmitted.

Dr. Bridge: This discussion has illustrated one truth, *viz.*: That no person can read, in a body of intelligent people, a paper occupying ten or fifteen minutes of time, and be completely understood, although he may speak in the plainest language. I find that the impression here is general that I referred exclusively to patients in the incipiency of pulmonary tuberculosis, and that I could not have meant those in the advanced stages. I referred to the impalpable sputum as a positive thing that was demonstrable and demonstrated, and of that there can be no question. It has been proven beyond peradventure. Of course, it has been demonstrated chiefly in the advanced cases, and of course those cases are most dangerous to others.

We have a great responsibility in this matter. I am anxious we should approach it intelligently, and if any of us is willing to take the responsibility of not warning people of the dangers of sputum, that is his care. I refuse to take that responsibility. It is too serious. Now, Dr. Babcock raised the question: How do we know how dangerous this sputum is? How do we know that it is specially dangerous? How does he know if people acquire tuberculosis from sputum whether it is from this impalpable sort that falls on the floor or the tangible kind that people can see? It is impossible to know. It is true that three or feet four from every patient expectorating these minute particles is a zone of danger, and the danger is just as real, if not as great, as the danger from a person who spits on the floor.

Dr. Babcock: That is the point I made, that there is danger in the impalpable sputum, but that it wasn't as great as in the visible sputum.

Dr. Bridge: I thank Dr. Glasgow for some of the things he has said, but his attitude on some phases of this question looks distinctly towards a turning back of the hands of progress. But I feel like thanking him for his keeping a very sick tuberculosis patient from going to California, and I hope our friends in Colorado feel the same way. One of the greatest lessons to be taught to practitioners in general is not to send desperately sick patients off in search of climate to get over consumption. I do not think Dr. Shurly means quite what he says that the measures I suggest are wholly impracticable. He would have his patients sit out in the sun. He would have their clothes sunned and aired, and he would do and does do all these things and many more in the same line without frightening the people or making the thing seem formidable. Is there any use in trying to destroy the bacillus anyway, if 98% of those dying at the hospital in Zurich were found to have tubercle bacilli, and if 48% of children dying in Christiania under fifteen years of age had tubercle bacilli in their bodies? Why pay any attention to this phase of the subject? Are we ready to go back to that position? I doubt it. It seems to be the consensus of opinion among students of bacteriology as to the cause of infectious diseases that it is not entirely the bacilli, but the dose of the bacilli the patients get, that is vital. We must minimize the dose by destroying as many as we can. The human body has a great power to protect itself against tubercle bacilli, as well as against many other germs of disease. People who acquire bacilli in youth often resist them years and years, and die of old age. Their resistance increases their power of resistance still further, and if later some of them do fall sick with consumption, it is simply because their vitality is lowered, but it proves the truth of what Dr. Trudeau has said, that acquiring tubercle bacilli in small doses and being able to resist them increases our power of general resistance to tuberculosis in the larger way. I am sure we cannot take the ground that we shall not attempt to destroy the germ of tuberculosis. Our attitude we cannot change, that palpable sputum must be destroyed. That has become a part of the general doctrine of intelligent mankind. Now, if it is proper to destroy the palpable sputum you have no argument that is worth much against the advice to destroy these particles of impalpable sputum.

DR. DELANCEY ROCHESTER, of Buffalo, N. Y., read a paper entitled

THE MAIN FACTOR IN THE SPREAD OF TUBERCULOSIS — SPUTUM FROM THE AMBULANT CASES. WHAT ARE WE GOING TO DO ABOUT IT?

The principal classes of persons who are most dangerous in this respect are those who, while appreciating the danger to others, are unwilling to take the necessary precautions in regard to their sputum; and a larger class composed of those who are, apparently, incapable of understanding the seriousness of the offense of indiscriminate expectoration. Knowledge of this subject is not so widespread as we suppose. A false belief in the contagiousness of tuberculosis, contagiousness in the popular sense, is making trouble, while those who try to enforce the anti-spitting ordinance are looked upon as cranks and oppressors. Dr. Rochester believes there is only way one to reach the dangerous tuberculous classes referred to, and that is by the removal of all such people, by force if necessary, to a proper institution and their retention there under proper supervision until death or cure occurs. The experience of New York City in this matter was cited and commended. The Department of Health of New York City has full power and control and patients can be retained only in institutions over which they have direct authority. So far as Dr. Biggs, the general medical officer of the New York Board of Health, is aware the forcible removal of tuberculous patients has not been attempted by any sanitary authorities, excepting those in New York City. In that city the death-rate from tuberculosis has declined 40% during the last ten years.

Dr. Rochester claimed that if New York City can accomplish this so can other communities, but we need united enthusiastic co-workers to push the education of the people generally so that they will demand and enforce proper laws. Ignorant and vicious spitters must be put under proper and thorough supervision in suitable institutions or all other reforms will be of little avail.

DR. R. H. BABCOCK, of Chicago: The whole matter resolves itself into one of ways and means. We are all agreed on certain fundamental propositions, that tuberculosis is due to the tubercle bacillus; that the disease spreads by infection, and that the infection comes from the dissemination of tubercle bacilli from lacerated tuberculous lesions and commonly, therefore, through the sputum. I think we all recognize this. It only now resolves itself into a question of what we shall do to restrict the spread of infection through tubercle bacilli given off by tuberculous patients. And just here is the vital point. Many are in favor of the most drastic measures, if necessary, for the isolation of patients, and any measures calculated to restrict the expectoration of tubercle bacilli. This infection, through the tubercle bacillus, is favored by certain other unhygienic conditions, which depress the vital resistance on the part of the individual on one hand, and which favor the retention of activity on the part of the tubercle bacillus on the other. Measures which are very unwise produce a fear on the part of patients of being characterized as infectious and to cause them to hide their disease, and to the denial of it on the part of both laity and physicians. I favor going a little less strenuously at first, believing that the main thing is the education of the public and the education of the physician. We should indorse only measures which are practical. If in certain communities laws can be passed which are stringent and effective and which, as in New York City, have reduced the death-rate from tuberculosis, then in those communities let such laws be passed; if in other communities we have to go at things a little more carefully, let us do it, but let us by all means show ourselves hand and heart in our desire to obtain the end in view. That the infection spreads through the sputum of patients we cannot deny, I have abandoned wholly any idea that the disease is due to hereditary influence, or to unhygienic influences, *per se*. Unless the tubercle bacillus be present, these various factors cannot produce the disease. In my last year's work, with all patients I have particularly tried to bring out the point, whether the patient had been exposed to infection by prolonged contact with consumptives, or the occupation of rooms which had been formerly lived in by tuberculous patients, and I cannot recall now a single instance in which I have not been able to get a satisfactory link of this kind. If that is the case, then, gentlemen, we must simply do everything we can which is practicable, whether it is the destruction of impalpable or palpable sputum, or the isolation of patients, or the compulsory registration of patients, whichever seems feasible in the particular community.

DR. E. L. SHURLY, of Detroit: I am very sorry my experience is so very opposite from that of Dr. Babcock in the investigation and collection of the facts. I have for ten years been after the same evidence that the doctor has been trying to collect, — the evidence to connect the patients who come to me presenting the clinical signs of pulmonary phthisis with exposure to some other case. And you will remember five years ago I read a paper before this association recounting an abstract of 123 cases, with a small number only where that conclusion could be adduced. I have taken pains to employ, as it were, detectives' methods, to interrogate other members of the family so as to corroborate the truth of my information, and the results which I have obtained have gone to show that a very small percentage only of the cases which have come to me in private and hospital practice could be connected in any rational way with direct exposure. Now, very often conclusions may be jumped at, unless some other members of the family are interrogated, for often the patients themselves cannot be depended upon. They don't mean to lie, but it is perfectly natural for them to do so. However, we can sometimes get at the truth through the relatives or friends of the patients, and in that way ascertain the facts. Now, I do not object to drastic measures at all, if they be necessary. I do not wish to be considered an objector, but I do say this, that before we go any further in the so-called educating of the public, or so-called educating of the profession (which seems to me a work of supererogation) we should find out the facts. We should endeavor to get facts and statistics which will put us on a solid foundation, so that we can go to the community with something tangible, sure. When I can go to my fellow citizens in Detroit and say: You must give up your individual liberty; you must separate yourself from your family, because you are endangering the health of the majority of the community, I want to be able to show that I am acting on facts, not theory, as one can do with smallpox or scarlet fever. In acute infectious diseases the isolation takes place for a short time only, but in phthisis pulmonalis it means an isolation covering months or years. We thus separate a family for months and years. Are we going to undertake such a thing? Are we going to do so on the statistics which we have at hand to-day in this country? I do not believe that it is fair to do it. Let us get some means before doing this of ascertaining positively how much this disease is communicable. Of course, we all know of individual instances, but we want to know how much, whether it is generally communicable to healthy per-

sons. In this state the State Board of Health have classified pulmonary phthisis with smallpox, scarlet fever, measles and diphtheria, etc., which I think is wrong! Now, let us find out the facts. I do not, however, believe we can ascertain these facts until every state of this Union shall appoint a commission of physicians whose proceedings shall be secret and inviolable, to whom the laity and the profession may go with any information they may have, and let that commission report to the State Board of Health from time to time. You cannot find any members of any community who will brand themselves or their families as tuberculous. I do not believe it is within human nature for people to do so on the evidence which we have at the present time. I hope this association may continue to ascertain exactly what the facts are, how much phthisis pulmonalis is communicable, how much liberty should be allowed the public, and how much or how severely we should caution the public.

Dr. A. D. Blackader, of Montreal: We all recognize that the sputum is a great source of infection, but sunlight and earth are powerful disinfectants. The very practical clinical experience of Dr. Babcock emphasizes the important fact that the great majority of our tuberculous cases contract the disease by close association with the person or with the immediate surroundings in home or workshop of an infected person. The important point is, What personal contact had the present case with some previous case? It seems to me that when we meet with consumptive patients our great object should not be to go and proclaim to all the world that that man is a consumptive. It makes less difference whether that man walks along the same street, or whether he even spits in the same street as another healthy man, but it makes all the difference in the world whether that man stays in the same house with others, and is careless with his sputa in that house or workshop. Our position is, first, that every consumptive is a source of danger, especially to members of his own family, and especially to those who are working in the same shop with him. If we take that ground our influence is greatly increased.

I have a very great deal of faith in the disinfecting power in Mother Earth, and I confess that I feel that ninety-nine cases out of a hundred contracted their infection not through the open air nor through the dust of the streets, but from infection in the house or the workshop.

Dr. Rochester: It is to the two classes of cases, those who are unable and those who are unwilling to properly take care of their sputa that this paper applies, and I think my position is perfectly tenable, and that it is the only position that can be safely held. I do not advocate the arrest of everybody, and I do not advocate segregation. I do state that it is most important that those cases who are unable or unwilling to take care of themselves properly should be by the health authorities put in an institution and kept there until they are either cured or dead. Now, I have unfortunately had experience at home in Erie County Hospital for Advanced Tuberculosis, where we have not the power to commit these people, where the people come there in the winter time, and improve under the care to be given them in tubercular hospitals, and then go out in the spring, and go down on the docks, and work on the grain vessels there, and infect the grain vessels; they sleep in one place one night and in another place another night, and they infect the places they go to, and in that way we have the chief spread of tuberculosis, and it is that class of cases we ought to have the legal power to commit. I rode up in the street car in going up to the county hospital on election day, and one of my tuberculosis cases had been drinking heavily, and he expectorated in the car five times while I was there. I spoke to the conductor about it, and the conductor spoke to him, but unfortunately there was no police officer around.

We haven't any place to put these patients, and we haven't any means of punishing them. If that man had been as he should have been, under the control of the health authorities, he never would have been out on election day at all, and he would have been made to care for his sputum. Now, that is the class of cases we have got to handle in the way advocated. I cannot understand Dr. Shurly's position. I think it is entirely untenable. I am perfectly surprised to see him get up here and make the statement that we do not know the life history of the tubercle bacillus. If there is one thing we do know it is that the tubercle bacillus is present in the sputum and in the infected tissue of tuberculous cases. We know we can grow tubercle bacillus outside the body under certain conditions, and that we can inject it into an individual and produce tuberculosis. Now, if that is not a complete history of the tubercle bacillus and a demonstration of the exact nature of the infection, I do not know what is complete. And it strikes me that we can certainly say that the sputum of cases of pulmonary tuberculosis is the main source of infection. I do not say it is the only source, but it is the main source of tuberculosis as we have it now, and until that sputum is properly cared for, and people who are unwilling or unable to properly care for it are put where they must, we will have tuberculosis with us always, but if it is cared for then it will not be very long before tuberculosis will be a thing of the past.

It takes a long time to educate the people. It is not only the people but the physicians, too, who must be educated to the point where the law can be applied. Now in New York City the law is applied, and the 40% reduction has been mostly since 1895, when the law began to be enforced. Physicians are obliged now to report all cases. Examination of the sputum will be made free if they will report the cases to the health department.

If the medical profession does not uphold its health authorities, then there is something wrong with the medical profession or with the health authorities, and the medical profession must see to it that the health authorities are what they ought to be. If the medical profession cannot put forward its best men, then they must get a higher standard of men in the medical profession. I do not think the concealment of cases has been going on to the extent that some believe. I do not think the medical profession is so low in moral tone as not to report cases. I think there are some few cases where mistakes have been made, but I believe that the reduction in tuberculosis cases is a true one, and I believe the increase in pneumonia cases is genuine. I know in Buffalo, in our general hospital, we have had a real increase in pneumonia cases, and there has been a reduction in tuberculosis cases. I do not think there is any great concealment of cases.

Dr. Curtin's remarks in regard to the so-called cured cases, as dangerous ones, are pertinent. They are dangerous if they do not take care of their sputa, and if they do not take care of it, then they must be taken care of in the way I have suggested. It is simply the cases that are unable or unwilling to take care of themselves that should be cared for in this compulsory manner. There is one other thing I do want to say, and that is a matter which I think is of very great importance, which I have the very greatest difficulty in controlling in places where the people are living at home, and that is the habit of kissing. It is remarkable the way tuberculous cases will kiss the other members of the family on the mouth. If there is one thing that I think will tend to the spread of that dis-

ease more than another, it is kissing. I made a few experiments on the advanced cases, in the tubercular ward of the county hospital a few years ago, taking cultures from the lips of patients. In 34 cases in which I took cultures from the lips, bacilli were present in all. On the lips, not in the mouth, but on the lips. They were advanced cases, but those are the cases which their relatives hang over and kiss.

DR. GUY HINSDALE, of Hot Springs, Va., read an account of an inspection of the Eastern State Penitentiary, Philadelphia, with reference to tuberculosis. This prison has been long famous for its system of solitary confinement and had, in 1903, at the time of the visits 1,010 prisoners. Of these there were 15 cases of tuberculosis of the lungs, 1 case laryngeal tuberculosis and 25 cases of tuberculous adenitis, some of the latter also having syphilis. The latter were distributed through the prison, but the pulmonary and laryngeal cases were segregated and provided with larger quarters and better food. The sputum was deposited in a tin basin partly filled with carbolized water, the contents being thrown into a hopper, emptying into a drain communicating without any traps with a series of cells in a block. During the colder weather these patients were accustomed to spend from a half hour to an hour daily in the yard.

During the previous twenty-five years there were 495 deaths, of which 292, or 60%, were due to pulmonary tuberculosis. The average cell has about 1,100 to 1,200 cu. ft. of contents with a window, 4 x 24 in. The cells are whitewashed twice a year. The food at the time of inspection was bad, except the bread, and disgustingly served. Milk and eggs may be had for hospital patients, but are never afforded in the usual dietary. The proper quantity of nitrogenous food was wanting and was reported as being a very probable contributary cause of the high death-rate from tuberculosis. There were no laboratory facilities, not even a microscope. Various defects were pointed out and methods suggested by which the spread of tuberculosis might be checked in the institution.

A report received two years later from the prison physician showed gratifying results.

(To be continued.)

Recent Literature.

Textbook of Anatomy. Edited by D. J. CUNNINGHAM, F.R.S., M.D. (Edin. et Dubl.), D.Sc. LL.D. (Glasg. et St. And.), D.C.L. (Oxon.), Professor of Anatomy, University of Edinburgh. Second and thoroughly revised edition. Illustrated with 936 wood engravings from original drawings, many printed in colors. pp. 1388. New York: William Wood & Co. 1905.

Within three years this comprehensive textbook of anatomy has entered its second edition. It represents the work of ten contributors, with but one exception, professors of anatomy in various universities of the United Kingdom. The book has been well received in this country, as in England, the reason for which is not far to seek. It is clear that every section is written with the utmost consideration for recent advances in anatomical research and also with a view of presenting the subject from the developmental as well as from the purely descriptive standpoint. The gradual introduction of embryological methods into general textbooks of anatomy, together with attention to the histological aspects of the subject, has brought descriptive anatomy as taught to students to a point which it should have reached many years ago. Adverse criticism of a book of this sort is impossible. It represents the best in modern book making, particularly with reference to illustrations. The sections on the nervous system, largely from the pen of Prof. D. J. Cunningham himself, are particularly worthy of commendation. There is constant reference to the facts of development, accurate drawings from actual sections are frequent, and the diagrammatic representations of nerve tracts and anatomical structures are most instructive. The book no doubt gains far more than it loses through multiple authorship. The various portions of human anatomy have so far become subjects of special study that collaboration is becoming a necessity. We most cordially commend this book to the attention of students and physicians alike.

Social Diseases and Marriage; Social Prophylaxis. By PRINCE A. MORROW, A.M., M.D., Emeritus Professor of Genito-Urinary Diseases in the University and Bellevue Hospital Medical College, New York; Surgeon to the City Hospital, etc. New York and Philadelphia: Lea Brothers & Co. 1904.

This is a book with a mission. It has, therefore, been addressed to the laity as well as to the medical profession, and is written in so untechnical a style that the meaning is nowhere obscure. Special stress is laid upon the social side of the problem, with the whole list of domestic misfortunes which venereal disease so frequently entails. The book may not be pleasant reading to many, but it cannot fail to be salutary.

The subject is discussed with the utmost detail and with entire candor, and the whole picture is painted in its darkest hue. Details of actual cases are used by way of illustration, and serve as no other method could to bring home the lessons the book is designed to teach. The menace which an attack of uncured gonorrhea holds for the future wife is drawn in colors which could not fail to influence the most callous reader, and in general the work is written in a purely missionary spirit, but without pedantry. The author is, however, so deeply imbued with the importance of his subject that he repeatedly falls into the error of repetition. The reiteration of the same idea is an annoyance to the intelligent reader, and certainly adds nothing to the strength of the argument. With this exception we have no criticism to offer. It is a manly and forcible presentation of a difficult topic. The book is 390 pages in length and is provided with a brief index.

A Nurse's Guide for the Operating Room. Second edition, enlarged and revised. By NICHOLAS SENN, M.D., Ph.D., LL.D., C.M., Professor of Surgery, Rush Medical College, in affiliation with the University of Chicago; Surgeon-in-Chief, St. Joseph's Hospital; Attending Surgeon to the Presbyterian Hospital, etc. Published under the direction of the Sisters of Charity, St. Joseph's Hospital, Chicago. Chicago, Ill.: W. T. Keener & Co.

This little book is in its second edition, the first edition having been published in 1902. The book would be very convenient for a nurse to turn to for information regarding her work in an operating room. The technic of asepsis is given in much detail and on the whole is well presented. The complications that may occur in wounds and a list of the preparations to be made for the principal operations are given in some detail. Formulæ are appended. The book has some of the conventional cuts that are used to illustrate handbooks of nursing.

Surgical Diagnosis. A Manual for Practitioners of Medicine and Surgery. By OTTO G. T. KILIANI, M.D., Surgeon to the German Hospital, Member of the New York Surgical Society, of the Surgical Society of Berlin (Germany), etc. Illustrated by fifty-nine full-page plates, and by engravings in the text. New York: William Wood & Co. 1905.

The objects of this book, as stated by the author, "are two-fold: to describe as exactly as possible the symptoms peculiar to a disease, on which a diagnosis can be based, and, wherever feasible, to show how to observe these symptoms." The book is conveniently arranged in an anatomical order. The author states that he has collected material from whatever source has seemed best, and states that he has intentionally avoided giving authorities. The usefulness of the book is not particularly enhanced by some of the illustrations. For example, there is little knowledge to be gained from "a burn by live trolley wire charged with 2,750 volts."

The book, as a whole, is really very satisfactory and we congratulate Dr. Kiliani on the accomplishment of an admirable piece of work. He justly says that "surgical diagnosis is really a 'contradictio in adjecto.'" We feel sure that the book will be very useful to students and general practitioners.

A Treatise on the Nervous Diseases of Children. By B. SACHS, M.D. Second edition, revised. 8vo., pp. xii, 571. With 137 illustrations. New York: William Wood & Co. 1905.

The merit of this book has been so fully recognized in the last ten years that it would be a work of supererogation to repeat the praises we then bestowed upon it. We know of no better work on the subject, and the translation into German, Italian and French shows a world-wide recognition of its value. A second edition containing one hundred pages less than the first is certainly unusual. The condensation is due in part to the omission of the excellent chapters on the anatomy and physiology of the nervous system and in part to the omission of the bibliographies and case reports. The general plan of the work remains unchanged, but there are few chapters that do not show considerable revision. The section on Landry's paralysis has been omitted, but new sections have been added on myoclonus epilepsy, Little's disease, chronic interstitial neuritis, chronic basilar meningitis and dementia precox. The author admits in this edition that in rare instances Little's disease may be due to a lesion of the cord, and that some of the cases of cerebral infantile paralysis may be due to Strümpell's polio-encephalitis. An exhaustive chapter on amaurotic family idiocy with an elaborate discussion of the pathology takes the place of the earlier account of the affection under the heading of a cerebral type of hereditary spastic paralysis. As is well known, our knowledge of this affection is due so largely to the author's researches that it has frequently been called by his name. It is much to be regretted that the author did not increase the size of this new edition by an elaboration of the chapter on the insanities of childhood. The need of a sane and intelligent discussion of this subject is very great, and the author's recent study of dementia precox, with its conservative attitude toward some of the psychiatric fads of the day, is a proof, if any proof were needed, that he could give us such a discussion; but with the exception of a very brief section on dementia precox, that chapter remains practically as it appeared ten years ago. The increasing frequency or the increased frequency in the recognition of juvenile general paralysis, of which more than twice as many cases are now on record as there are of amaurotic family idiocy, warrants more recognition than the author grants. Juvenile tabes, too, deserves a word of mention, although the pathological proof of its existence is still in question. These omissions, however, are but minor defects in a work of acknowledged excellence, and we trust that a speedy demand for a third edition will afford the author an opportunity to deal with these subjects more fully.

A Manual of Diseases of Infants and Children. By JOHN RUHRÄH, M.D., Clinical Professor of Diseases of Children, College of Physicians and Surgeons, Baltimore. 12mo volume of 404 pages, fully illustrated. Philadelphia and London: W. B. Saunders & Co. 1905.

Feeling as we do that there is no justification for manuals of the class which this represents, we cannot, of course, recommend it. It is, however, far better and more comprehensive than most similar works and is very well up-to-date. It is, of course, necessarily incomplete and often fails to give a proper picture of the disease in question. The illustrations are good and well selected. The references to pediatric literature are an unusual and valuable feature. We regret that more of them are not given.

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ART IN MEDICINE.

WE are evidently passing through a period of adjustment in medicine. The development of the science is, in the minds of some, assuming too large a share of attention with a corresponding decline in what has well been called the art of medicine. From time to time a note of warning is sounded from an authoritative source to which it is well to give heed, however little such warnings are capable of checking natural development. It is an old story that any inexact science like medicine must grow by a continual application of scientific method let what will become of the art of practice. That this tendency is, on the whole, beneficent is not to be questioned, but we are quite ready to admit that the practice of medicine in the narrow sense may, temporarily at least, be a sufferer thereby.

Sir Dyce Duckworth has recently recurred to the somewhat timeworn topic in an excellent address on the "Present Decline of Art in Medicine," given before the Abernethian Society at St. Bartholomew's Hospital and commented on editorially in a recent edition of the *Lancet*. In this address he puts to himself the query whether the advance made within the last few years in sciences closely related to medicine has resulted in the development of a more skilful type of practitioner than under the old régime in vogue twenty-five years ago. His answer to this query is that the final product of our medical schools is poorly equipped to care for the sick or to manage patients. He concludes, therefore, that the art of medicine has been neglected and that it has, in fact, positively declined. Attention is called to the textbook of thirty years ago as compared with one of the present time, to the apparent detriment of the latter since the earlier book dealt with patients and their symptoms and the latter deals with generalizations and abstractions. From this the argument proceeds that medicine is not an exact science and that its practice deals essentially with the individual and with the capacity to apply the general to the particular. Sir Dyce Duckworth, therefore, thinks, as we should expect from the foregoing argument, that the student is over-taught in the laboratories and under-taught in the wards.

The *Lancet*, commenting on the address, thinks that what we need is a critical examination of methods of teaching to the end that the student may be given a fuller opportunity to apply his exact knowledge. This again is coming to be an old story, certainly in this country. Reform in medical teaching has been in the air for years, discussions have multiplied and new plans have been enforced to such a degree that in the minds of many thinking persons a halt is necessary to give us time to breathe and consider whether our so-called reforms are always in the line of progress. The aim which the modern medical school sets itself to accomplish is perfectly definite. It must ground its students in the theory of medicine and in the scientific methods which that implies. It must, on the other hand, so far as lies in its power, instil into its students, as Sir Dyce Duckworth suggests, the best methods of caring for individual cases. The two aims should not be antagonistic, and, we believe, are not to the extent which some of the writers of the older school are pleased to maintain. It is futile to compare the textbook or the medical curriculum of to-day with that of forty years ago. Then there was little else to teach except an observation of symptoms and means of treating them. To-day such an education would not permit a candidate to qualify for practice. It may be an evil of our present system that the art of medicine receives less attention than heretofore, and no doubt it is desirable to minimize the evil, but to do so at the expense of the science of medicine is neither progressive nor possible. Furthermore, however poorly equipped a student may be to undertake the personal treatment of patients immediately after his graduation, no one will maintain that many of the qualities demanded may not be acquired by actual experience. It is likewise true that the personal element in the physician is after all a large factor in his success, and this is not to be taught in the schools and

never was there taught. On the other hand, the absolutely essential groundwork of medicine represented by our laboratories is not likely to be acquired in the years of active practice, and must be taught in the years of preparation. We are not pessimistic as to the ultimate outcome of the present tendencies. The family adviser may go, but in his place will develop a type of man whose service to his race will not be less because of his different training. Desirable as it is to recognize our present shortcomings, and they no doubt exist in the form which Sir Dyce Duckworth pictures, it is well to face the actual facts and adjust ourselves thereto as best we may.

THE TASK OF THE WEEKLY MEDICAL JOURNAL.

That the task of the weekly medical journal is becoming increasingly difficult, year by year, is not to be questioned. This has been brought about in part by competition, but more especially through the natural tendencies which are developing in medical practice and research. The weekly journal has a double function to perform; if it is to retain a position of respect it must, at all times, keep pace with general medical advance. This means that it must be competent to make authoritative statements with regard to the many special branches of medical practice, so that the omnipresent specialist may not lay it aside as quite useless to him. It must on the other hand cover the ground of general medicine and surgery so thoroughly that no voice will be raised in protest against its specializing tendencies, with the result that the so-called general practitioner will omit it from his weekly reading.

The smallest consideration of the matter will show that the weekly medical journal is more and more striving to appeal to two totally different classes of readers — classes which twenty years ago practically did not exist. It must reach and be acceptable to the special student in an increasing variety of subjects, and it must, on the other hand, not fail to be of interest and practical importance to the rank and file who are worthily practising medicine from the most general standpoint in outlying towns and villages. In these latter a dissertation on immunity or on experiments in metabolism, or on an obscure disease of the nervous system, is likely to excite a certain feeling of resentment at the unpracticality of modern medicine, as exemplified in its representative journals. We sympathize in a measure with this attitude of the man who wishes first of all to know what to do for his patients, and we fully realize that just here a distinct demand is continually being made upon the weekly journal, which it often fails utterly to supply. But quite a different demand is at the same time being made by the metropolitan physician, who takes up his weekly journal in the hope of finding therein the latest theoretical discussion on the etiology of cancer, or a description of the best technical method of performing a gastro-enterostomy, or a disquisition on some like highly specialized subject.

This, then, is the dilemma, and it must be squarely faced. Whether it can be fairly and satisfactorily met in the future, experience alone can decide. In the meantime it is well that not only editors but also readers should recognize the peculiar difficulty of the situation. From one side we hear criticism of the superficiality and commonplace character of certain articles, and on the other an equally hostile attack on the "over scientific" character of certain other articles, which are claimed to be quite useless to our brother practitioner in the country. The gap is widening — of this there can be little doubt; and the editor asks, if not for help, at least for charitable consideration at the hands of his diverse readers. Papers which represent original work, however technical they may be, we must have, if the weekly journal is to keep its place of dignity. For these, we beg the indulgence of the routine practitioner who finds them unnecessary. Papers dealing with the practical results of investigation and their application to the immediate cure of the sick we should have in far greater number than now. For such contributions we need not ask the specialist's indulgence, however absorbed he may be in the contemplation of his own line of work.

The problem before us, therefore, is to reconcile the demands of the specialists and those of the practitioners who still cover as best they may the whole field of medicine. This, as we have stated, is an extraordinarily difficult matter, but we believe not impossible of accomplishment, if, on the one hand, the specialist can be brought to promulgate the general applications of his work and study, and if, on the other hand, the general practitioner can be made to realize that his art will be vastly enhanced by a profounder knowledge of special branches. This should be the missionary work of the weekly journal. It demands the charitable co-operation of all types of physicians.

MEDICAL NOTES.

MEMORIAL TO THE LATE DR. ALEXANDER J. C. SKENE. — A bronze bust of the late Dr. Skene surmounting a marble pedestal is to be erected in Brooklyn, N. Y. It is expected that the entire structure will be completed and in place by the end of this month.

APPOINTMENT OF DR. WILLIAM M. L. COPLIN. — The appointment of Dr. William M. L. Coplin is announced as director of the Department of Public Health and Charities of Philadelphia. Dr. Coplin is professor of pathology and bacteriology at the Jefferson Medical College.

AWARD OF THE NOBEL PRIZES. — Among the awards this year of the Nobel prizes were $40,000 each to the following men: Philip Lanard, Professor at Kiel, for researches on cathode rays, in the department of physics; Adolph von Beyer, Professor at Munich, for researches in organic chemistry and the development of chemical industry, in the department of chemistry; and Robert Koch, Professor at Berlin, for researches on the prevention of tuberculosis in the department of medicine. The presentations were made at the Royal Academy of Music at Stockholm, under the direct patronage of King Oscar.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, Dec. 13, 1905, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 39, scarlatina 24, typhoid fever 16, measles 161, tuberculosis 36, smallpox 0.

The death-rate of the reported deaths for the week ending Dec. 13, 1905, was 17.44.

BOSTON MORTALITY STATISTICS. — The total number of deaths reported to the Board of Health for the week ending Saturday, Dec. 9, 1905, was 237, against 197 the corresponding week of last year, showing an increase of 40 deaths and making the death-rate for the week 20.7. Of this number 131 were males and 106 were females; 229 were white and 8 colored; 143 were born in the United States, 89 in foreign countries and 5 unknown; 34 were of American parentage, 171 of foreign parentage and 32 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 38 cases and 3 deaths; scarlatina, 24 cases and no deaths; typhoid fever, 26 cases and 2 deaths; measles, 139 cases and 3 deaths; tuberculosis, 38 cases and 18 deaths; smallpox, no cases and no deaths. The deaths from pneumonia were 46, whooping cough 0, heart disease 16, bronchitis 11 and marasmus 2. There were 26 deaths from violent causes. The number of children who died under one year was 56; the number under five years, 78. The number of persons who died over sixty years of age was 66. The deaths in public institutions were 60.

REGISTRATION IN MEDICINE. — At the recently held examination for registration in medicine in Massachusetts there were one hundred and eleven applicants of whom only fifty-seven passed a sufficiently satisfactory examination to receive certificates of registration.

NEW MEDICAL BUILDING FOR THE UNIVERSITY OF VERMONT. — It will be remembered that last year the building used by the medical department of the University of Vermont was burned and totally destroyed. A new building to take its place has been erected at a cost of $100,000, which has just been opened with fitting ceremonies for the use of students.

THE INGERSOLL LECTURER AT HARVARD. — Prof. Wilhelm Ostwald, of Leipzic, who is lecturing on chemistry at Harvard University this winter, was selected to give the Ingersoll lecture which was delivered Dec. 12. The subject was "Individuality and Immortality." It will be remembered that Dr. Osler delivered the lecture under this foundation two years ago.

NEW YORK.

FREE PUBLIC BATH. — An additional free public bath, in Allen Street, on the lower East Side, was opened on Nov. 29. The building is two stories high and contains 165 shower baths and 16 tubs. It is estimated that one thousand persons can bathe there every hour. Two other permanent free baths are to be opened during the present month, one in East Eleventh Street and one in East Sixty-sixth Street. Still another is in course of construction in West Sixtieth Street and will be completed before the close of the winter.

DECREASE IN INSANITY. — At the thirty-third annual meeting of the State Charities Aid Association, which was held on Dec. 6, the gratifying announcement was made that insanity in New York City and State is now declining, instead of increasing, as has so long been the case. The report of the board of managers showed that the number of insane persons committed in the past year had been less than in any year since 1890. The total number was 547, as against 927 last year and an average of 758 per annum

for the preceding ten years. The number of recoveries was 1,429, as compared with 1,303 in the year previous. On Oct. 1 the total number of committed insane in the state hospitals and private institutions was 27,408.

MORTALITY IN NOVEMBER. — The mortality in the city during the month of November represented an annual death-rate of 16.42, as against 17.18 in October and 15.90 in November, 1904. The corrected death-rate, excluding non-residents and infants under one week old, was 15.54. During the week ending Nov. 11, the death-rate fell to 14.61, with a corrected rate of 13.84, which is one of the lowest in the records of the Health Department. Among the diseases in which there was a decline in fatality were the following: The weekly average of deaths from whooping cough decreased from 4.75 in October to 3 in November; the weekly average from diarrheal diseases, from 114.75 to 35.25; from diarrheals under two years of age, from 105.75 to 29.25; and from typhoid fever, from 17.25 to 11.75. Among the diseases which showed an augmented mortality were the following: The weekly average of deaths from measles increased from 2.57 to 9; from scarlet fever, from 4.5 to 6.5; from diphtheria and croup, from 23.5 to 26; from epidemic cerebro-spinal meningitis, from 9 to 10; from pulmonary tuberculosis, from 154.75 to 167.5; from acute bronchitis, from 19.25 to 27.75; from pneumonia, from 75.75 to 139; from bronchopneumonia, from 52.25 to 72.75; from cancer, from 52 to 58.25; from organic heart diseases, from 99 to 101.5; and from Bright's disease and nephritis, from 103 to 121. It will thus be seen that within a month, on the approach of cold weather, notwithstanding the exceptional clemency of the season, the number of deaths from pneumonia has nearly doubled.

Miscellany.

PROFESSOR BURDON-SANDERSON.

The *British Medical Journal* comments in part as follows on the late Professor Burdon-Sanderson:

"He was never petty or departmental in his views, but looked all round. While excellent in planning an attack on a problem by laboratory methods, he had little of the mechanical skill of many eminent investigators. It might be said of him that he was great in strategy, good in tactics, and chiefly dependent on his assistants and pupils for the instrumental details. In him the critical faculty was developed to a very high degree, but it was combined with an eager desire that criticism should bear fruit, that, having discovered a fallacy, the matter should be reconsidered and investigated again, avoiding that fallacy. Along with his remarkable intellectual powers, Sanderson possessed a quality scarcely less important than knowledge and insight — enthusiasm. He took a deep interest in education and in science, read widely and critically, spared no labor in his duties, and was capable of inspiring a contagious intellectual zeal.

"Nothing was finer than his defence of experimental science in the great Oxford debate concerning the equipment of a physiological laboratory. He looked and spoke with a force and distinction which compelled the respect of those who were most prejudiced against him. Part of his success on such occasions was no doubt due to his stature, to his noble and expressive countenance, and his unaffected but most expressive language and voice. It was said in the height of the storm against vivisection that, if the worst came to the worst, and a victim were demanded, the striking and ascetic figure of Sanderson would have decided the case in favor of science.

"To complete the picture of his life and work one cannot omit his genuine and unconscious simplicity, of which many stories were told, some of them invented long before his time; it was a *sancta simplicitas* like that of Newton or Darwin, and added a charm to his learning and experience."

ACTION OF ALCOHOL UPON THE CIRCULATION.

IN its tenth volume the National Academy of Sciences publishes "a research upon the action of alcohol upon the circulation," by Drs. Horatio C. Wood and Daniel M. Hoyt. Basing their results upon an elaborate series of experiments, the following conclusions are reached: Alcohol does not seriously affect blood pressure in the normal animal; elevates the blood pressure after vaso-motor paralysis from action of the cervical cord; increases enormously the rate of blood flow; directly stimulates the heart; therefore, the general action upon the circulation of the moderate dose of alcohol is great increase in the rapidity of the circulation caused by cardiac stimulation, with vascular dilatation due to depression of the vaso-motor centers. The writers think that the conclusions which they have reached tend to throw much light upon the practical problem of the therapeutic uses of alcohol, since they indicate that certain results supposedly due to direct action of the drug are secondarily produced by the increase of the activity of the circulation. There is at present no sufficient proof that alcohol acts as a direct cerebral stimulant, nor, except in very rare instances, does it augment the working power of the brain. The well-recognized brilliancy of conversation and apparent cerebral stimulation, which alcohol induces, is due not to the direct action of the drug upon the brain, but to the greatly increased cerebral circulation.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, Dec. 2, 1905.

CITIES.	Population.*	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases	Diphtheria and croup.	Typhoid Fever.	Diarrheal Diseases.
New York		1,375	339	21.96	20.36	2.48	.73	3.05
Chicago		483	130	26.50	12.83	2.48	1.65	6.41
Philadelphia		463	110	20.30	17.50	4.10	2.59	2.16
St. Louis		—	—	—	—	—	—	—
Baltimore		224	60	25.44	15.62	4.01	2.23	4.46
Cleveland		—	—	—	—	—	—	—
Buffalo		—	—	—	—	—	—	—
Pittsburg		—	—	—	—	—	—	—
Cincinnati		—	—	—	—	—	—	—
Milwaukee		—	—	—	—	—	—	—
Washington		—	—	—	—	—	—	—
Providence		54	10	12.96	14.81	—	3.70	—
Boston	595,380	181	44	16.57	22.09	1.10	.55	—
Worcester	128,135	30	12	3.33	16.67	—	—	—
Fall River	105,762	34	17	17.65	20.59	5.88	—	5.88
Cambridge	97,434	22	6	13.64	27.27	13.64	—	—
Lowell	94,889	31	12	9.68	19.35	9.68	—	—
Lynn	77,042	15	1	26.67	—	—	—	6.67
New Bedford	74,362	25	12	24.00	32.00	8.00	—	—
Springfield	73,540	24	—	8.33	16.67	—	—	—
Lawrence	70,050	22	7	13.64	27.27	—	—	—
Somerville	69,272	18	5	11.11	16.67	5.56	—	—
Holyoke	49,834	20	4	40.00	15.00	10.00	—	—
Brockton	47,794	4	0	25.00	—	—	—	—
Malden	38,037	8	1	—	—	—	—	—
Haverhill	37,830	—	—	—	—	—	—	—
Salem	37,627	14	3	21.43	7.14	—	—	—
Chelsea	37,289	17	8	11.76	23.53	—	—	—
Newton	36,827	5	1	—	20.00	—	—	—
Fitchburg	33,021	14	4	28.57	28.57	7.14	7.14	—
Taunton	30,967	—	—	—	—	—	—	—
Everett	29,111	8	1	—	—	—	—	—
Quincy	28,076	3	2	—	66.67	—	—	—
Waltham	26,282	4	1	—	75.00	—	—	—
Gloucester	26,011	—	—	—	—	—	—	—
Pittsfield	25,001	8	—	37.50	12.50	—	25.00	—
Brookline	23,486	3	3	—	—	—	—	—
North Adams	22,150	6	1	33.33	—	—	—	—
Chicopee	20,191	4	0	25.00	—	—	—	—
Northampton	19,987	—	—	—	—	—	—	—
Medford	19,686	8	1	—	12.50	—	—	—
Beverly	15,223	4	—	—	25.00	—	—	—
Newburyport	14,675	7	0	—	14.29	—	—	—
Hyde Park	14,510	5	1	—	—	—	—	—
Woburn	14,402	11	3	9.09	18.18	—	—	—
Leominster	14,297	—	—	—	—	—	—	—
Melrose	14,295	4	0	25.00	—	—	—	—
Marlboro	14,073	7	0	57.14	14.29	—	—	—
Westfield	13,611	5	1	—	60.00	—	—	—
Clinton	13,103	2	1	—	—	—	—	—
Peabody	13,098	—	—	—	—	—	—	—
Attleboro	12,702	—	—	—	—	—	—	—
Revere	12,659	2	—	50.00	50.00	—	—	—
Adams	12,486	—	—	—	—	—	—	—
Milford	12,105	—	—	—	—	—	—	—
Gardner	12,012	3	—	33.33	—	—	—	—
Weymouth	11,585	2	0	50.00	—	—	—	—
Framingham	11,548	—	—	—	—	—	—	—
Watertown	11,258	1	—	—	—	—	—	—
Plymouth	11,119	—	—	—	—	—	—	—
Southbridge	11,000	5	2	60.00	20.00	40.00	20.00	—
Wakefield	10,268	2	—	—	100.00	—	—	—
Webster	10,018	—	—	—	—	—	—	—

*Census, 1905.

Deaths reported, 3,187; under five years of age, 803; principal infectious diseases (smallpox, measles, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption), 684; acute lung diseases 585, consumption 382, scarlet fever 8, whooping-cough 11, cerebrospinal meningitis 24, smallpox 0, erysipelas 5, puerperal fever 13, measles 19, typhoid fever 42, diarrheal diseases 90, diphtheria and croup 89.

From whooping cough, New York 3, Chicago 3, Philadelphia 1, Baltimore 3, Holyoke 1. From scarlet fever, New York 6, Chicago 1, Chelsea 1. From cerebrospinal meningitis, New York 15, Philadelphia 2, Baltimore 1, Boston 3, Worcester 1, Somerville 1, Fitchburg 1. From erysipelas, New York 3, Chicago 1, Philadelphia 1. From typhoid fever, New York 10, Chicago 8, Philadelphia 12, Baltimore 5, Providence 2, Boston 1, Fitchburg 1, Pittsfield 2, Southbridge 1. From measles, New York 11, Chicago 4, Philadelphia 3, Boston 1. From diphtheria and croup, New York 34, Chicago 12, Philadelphia 19, Baltimore 9, Boston, Fall River, New Bedford, Holyoke and Southbridge 2 each, Cambridge 3, Somerville 1, Fitchburg 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,809,377, for the week ending Nov. 25, 1905, the death-rate was 17.9. Deaths reported 5,380; acute diseases of the respiratory organs (London) 282, whooping cough 76, diphtheria 52, measles 110, smallpox 0, scarlet fever 39.

The death-rate ranged from 9.8 in Willesden to 24.9 in Liverpool and West Hartlepool; London 19.4, West Ham 16.6, Brighton 13.5, Southampton 18.2, Plymouth 18.4, Bristol 15.1, Birmingham 17.8, Leicester 16.5, Nottingham 14.1, Birkenhead 17.1, Wigan 19.3, Bolton 15.5, Manchester 20.2, Salford 17.8, Halifax 15.4, Bradford 14.9, Leeds 17.4, Hull 20.0, Sheffield 16.5, Newcastle-on-Tyne 18.5, Cardiff 12.7, Rhondda 14.2, Merthyr Tydfil 16.2, Hastings 10.9, Bootle 20.8.

METEOROLOGICAL RECORD.

For the week ending Dec. 2, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

DATE	Barometer.	Thermometer.			Relative humidity.			Direction of wind.		Velocity of wind.		Weather*		Rainfall in Inches.
	Daily mean	Daily mean.	Maximum.	Minimum.	8.00 A.M.	8.00 P.M.	Daily mean.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	
S. 26	29.90	40	46	35	82	93	88	N W	E	7	7	C.	O.	0
M. 27	30.12	40	47	34	75	58	67	W	N W	15	10	C.	C.	0
T. 28	30.32	34	40	27	60	64	62	W	S E	8	8	F.	O.	.03
W. 29	29.62	51	62	40	97	100	98	S W	W	30	15	R.	R.	1.05
T. 30	30.13	39	47	13	55	42	48	N W	N W	38	34	O.	C.	T
F. 1	30.51	32	33	12	50	65	58	N	N W	4	10	C.	C.	0
S. 2	30.50	40	54	26	98	68	70	S	S	13	4	R.	O.	0
Av.	30.20		47	27			70							1.08

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. Av. Means for the week.

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING DECEMBER 9, 1905.

E. O. HUNTINGTON, surgeon. Ordered to treatment at the Naval Hospital, New York, N. Y.

J. S. WOODWARD, assistant surgeon. Detached from the "Brooklyn" and ordered to Colon, Panama, for special duty.

J. H. HOLLOWAY, assistant surgeon. Ordered to the Navy Yard, Norfolk, Va.

A. H. WISE, acting assistant surgeon. Detached from duty with the Naval Recruiting Party No. 1, Dec. 16, 1905, and ordered to the Navy Yard, Washington, D.C.

LECTURE.

LECTURE ON NEW ORLEANS YELLOW FEVER EPIDEMIC. — Assistant Surgeon William C. Rucker, U. S. Public Health and Marine Hospital Service, will give an illustrated lecture on "The New Orleans Yellow Fever Epidemic of 1905" in the amphitheatre of the Tufts College Medical School, 416 Huntington Ave., Boston, Monday, Dec. 18, 1905, at 8 P.M. Members of the medical profession are cordially invited to be present.

RECENT DEATHS.

DR. JOHN MATHESON of New York was found dead, with a bullet hole in his skull, early on the morning of Dec. 8, in the borough of the Bronx, of which he was a resident. The wound is supposed to have been inflicted by an Italian night-watchman with whom it is thought he had a dispute. Dr. Matheson was thirty-five years of age, and a native of Prince Edward Island, Canada. He was graduated from the medical department of the University of the City of New York in 1896. Before the recent election his name was considered among the candidates for the position of coroner.

DR. EDWARD OSBORNE of East Hampton, Long Island, N. Y., died from cardiac disease, on Dec. 4, at the age of seventy. He was noted for his kindliness and charity, and was the last of a family which for two centuries enjoyed the respect of the residents of East Hampton and its vicinity. Since 1735 the Osborne family had occupied the same homestead in the ancient village.

BOOKS AND PAMPHLETS RECEIVED.

Practical Massage in Twenty Lessons. By Hartvig Nissen. Illustrated. Philadelphia: F. A. Davis Co. 1905.

Transactions of the American Otological Society. Thirty-eighth Annual Meeting, Boston, Mass., May 9 and 10, 1905. Volume IX, Part 1.

Original Articles.

REPORT OF THE COMMITTEE APPOINTED BY THE SUFFOLK DISTRICT MEDICAL SOCIETY TO INVESTIGATE THE PROGRESS OF THE CRUSADE AGAINST TUBERCULOSIS IN THE CITY OF BOSTON.*

BY HENRY JACKSON, M.D., EDWARD O. OTIS, M.D., AND EDWIN A. LOCKE, M.D.

In compliance with the vote of the Society, April 29, 1905, we have investigated the progress of the work of the various agencies employed in Boston against tuberculosis, and herewith submit the following report:

A thorough examination of the progress made has necessitated in the minds of the committee an accurate study of the existing conditions as well as of the various methods employed. Furthermore it has seemed to us appropriate to make such suggestions for additional efforts as the existing conditions together with the experience of other municipalities indicate. This report is, therefore, naturally divided under the following main divisions:

(1) A statement of the existing conditions, *i. e.*, the prevalence of the disease and geographical distribution.

(2) An account of the various agencies at present employed in the crusade.

(3) A study of the results already accomplished.

(4) Recommendations relative to a more effective campaign.

1. THE PRESENT CONDITIONS IN BOSTON.

The existing conditions are appalling. In the year 1904, one thousand four hundred and fourteen (1,414) cases of consumption were reported to the Board of Health, and during the same year one thousand two hundred and sixty-nine (1,269) deaths resulted from the disease, representing a death-rate of 20.83 per 10,000, or 11.33% of the total mortality. This high mortality is made more striking by comparison with that from the so-called acute exanthemata, the combined death-rate from scarlet fever, diphtheria and measles, being only 3.21% of the total mortality. But one disease, *i. e.*, pneumonia, shows a greater mortality and that but slightly (12.5% of the total mortality). This is strikingly shown by the following table. Among the twelve largest cities in the United States, Boston stands third, New Orleans and San Francisco alone having a higher death-rate from consumption.

Exact statistics as to the number of cases of phthisis in the city are not available, but approximately three thousand (3,000) are at present within the city limits. Just what proportion of these are to be classed as of the advanced type it is impossible to state, but certainly a very large proportion fall within this class. During the past five years over a thousand cases from Boston have been refused at the Rutland Sanatorium as too far advanced. An examination of the geographical distribution of these cases shows the highest mortality to exist in the most congested and poorer sections of the city (Ward 7, mortality 39.39 per 10,000; Ward 11, Back Bay, mortality, 12.72 per 10,000; see Chart III). In other words, the highest death-rate exists among those least able to properly care for the sick. For such advanced cases almost no provision is at present made by the city. We shall discuss this more fully later.

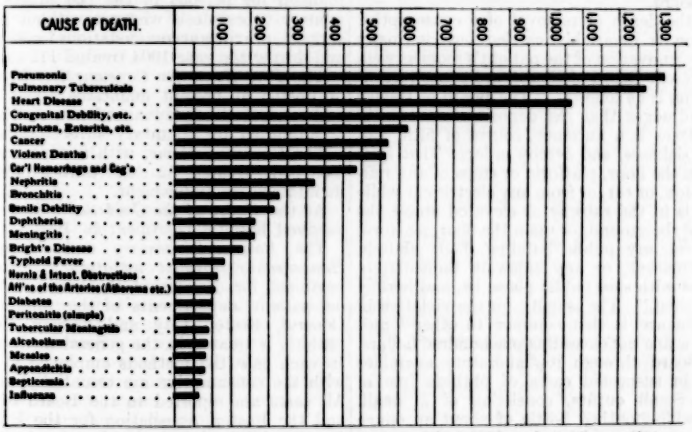


CHART 1. — Comparative view of twenty-five of the principal causes of death in Boston during the year 1904. (From the Annual Report of the Boston Health Department.)

2. AGENCIES AND METHODS EMPLOYED.

A. Board of Health. — Probably no American city can show more thorough and efficient Board of Health supervision. By law each physician is

*Read at the meeting of the Suffolk District Medical Society, Oct. 28, 1905.

required to report to the Board of Health all cases of phthisis. At present, however, physicians are simply requested to report cases, failure to do so not being followed by prosecution on the part of the Board. An encouraging increase in the numbr yearly reported is shown by the figures for the past six years, since the request was first made (1900, 815; 1904, 1,414 cases). Each case reported is visited by an agent of the Board, and a thorough inspection made as to the sanatory conditions. Personal instruction is given, and a printed circular either given the patient or furnished through his attending physician. Forcible removal lies within the power of the health officers, but is rarely resorted to because of the lack of hospital accommodations for pulmonary tuberculosis.

It will thus be understood that a large class of careless, ignorant consumptives are, from force of circumstances, permitted to remain in their homes under conditions which are a menace to the community.

The administration of the laws relating to tenements is partially under the administration of the Board.

After the death or removal of a consumptive fumigation is invariably carried out, in many instances renovation of the patient's room as well.

The present Board of Health ordinance regarding spitting is as follows: "The Board of Health hereby adjudges that the deposit of sputum in public places is a nuisance, source of filth, and cause of sickness, and hereby orders: That spitting upon the floor, platform or steps of any railroad station, or car, or from any electric car while said car is in the subway or elevated above the surface of the ground, or upon the floor, platform or steps of any public building, hall, church, theatre, market, or any sidewalk immediately connected with said public place, be, and hereby is, prohibited." The penalty for the violation of this ordinance is that common to other "nuisances," a fine not exceeding one hundred dollars.

The Board through its laboratory examines sputum in suspected cases of phthisis free of charge. Small outfits, consisting of a small, square, wide-mouthed bottle of about an ounce capacity, together with printed directions as to the method of collecting and sending, are supplied through the "stations" in various parts of the city (46 in all). A report is mailed within twenty-four hours to the physician sending the specimen.

Medical inspection of the public schools also plays an important part in the work of the Board in combating tuberculosis.

B. Hospitals and dispensaries. — Phthisical patients, as such, are not received in the wards of any of the four large hospitals of the city, *i. e.*, the Boston City, the Massachusetts General, Carney and Massachusetts Homeopathic Hospitals. Of those having phthisis, but admitted for other causes, the number receiving treatment during 1904 were as follows: Massachusetts General Hospital, 27; Boston City Hospital, 256; Carney Hospital, 25; Massachusetts Homeopathic Hospital, 13; or 321 altogether; but since these cases were, in most instances, discharged after a stay of a few days or weeks, these institutions can hardly be considered factors in caring for the great class of consumptives.

The Long Island Hospital in Boston Harbor has, since its establishment, made provisions for consumptives, and in November, 1902, was opened a separate hospital building constructed according to the most approved ideas of a modern sanatorium. This building contains twelve private rooms and two large wards, each containing twenty-one beds, a total of fifty-four. These patients, except in certain minor details, live under the same régime as is enforced in the best phthisical sanatoria. So great has been the demand for hospital care of the chronic cases among the dependent classes that two wards in the main hospital, one male and one female, have been set aside for consumptives, these bringing the total number of available beds for this disease up to 110. In these wards the facilities for proper isolation and treatment are entirely inadequate.

The *Cullis Consumptives' Home* in Dorchester, founded for persons in the last stages of pulmonary tuberculosis who are without means of support, provides accommodations for 40 patients, and during the year 1904 treated 111 cases.

The *Free Home for Consumptives* in the city of Boston at present maintains about 30 beds and receives chiefly advanced cases. The Home is supported by voluntary subscriptions.

The *Channing Home*, with a capacity of sixteen beds, treated 52 cases during 1904. It is maintained by endowment.

At the *House of the Good Samaritan* 49 cases received hospital treatment in 1904.

The *Boston Dispensary* and *Massachusetts Homeopathic Hospital* maintain a separate department for diseases of the lungs, but in the out-patient departments of the Massachusetts General, Boston City and Carney Hospitals, phthisis is treated in the general medical clinic. In each case the methods employed in dealing with the consumptive are essentially the same. All cases are reported to the Board of Health and the Boston Association for the Relief and Control of Tuberculosis, and in every instance the patient is visited by the inspector from the former, and at frequent intervals by a nurse from the latter. Weekly reports regarding the patient's condition are furnished to the clinics by the visiting nurse and have proved of the greatest help in effectively carrying out the details of home treatment. All suitable cases are referred to some sanatorium, and destitute ones, if possible, sent to one of the hospitals receiving such.

C. Individual and voluntary effort. — Under this head, we have such measures of control and relief as are of individual initiative, as illustrated by Dr. Pratt's admirable work during the last summer and which he will describe; and all the quiet, persistent efforts which each physician personally exerts, or should, in the community where his professional work lies. Second, associated effort, as illustrated by the *Boston Association for the Relief and Control of Tuberculosis.*

This association is endeavoring to accomplish the work indicated by its name. By means of free literature, free lectures before all kinds of audiences, exhibitions, etc., it is enlightening the public with regard to the main facts of tuberculosis, namely, its prevalence, communicability, avoidance, treatment, etc. For the last two years such work has been going on throughout the city. In this connection attention is called to the important tuberculosis exhibition which is to take place in this city in December, extending over a week, rendered possible by the appropriation of two thousand dollars made by the last legislature, and placed under the direction of the State Board of Health. The material for this exhibition comes largely from that of the recent one held at Paris under the auspices of the International Tuberculosis Congress.

The Boston Association also co-operates with all the hospitals and dispensaries in the city as well as all private physicians in visiting all cases of tuberculosis reported to it by these bodies, either through its own visitor or the district nurses, and in reporting back to them the hygienic condition of the patient at his home, and in rendering relief in whatever way needed and to the extent of its ability. It also furnishes, free, paper napkins and spit cups. A catalogue, both of the names of the consumptive patients and of their residence, is kept at the office of the Association.

The Association also works in connection with the Board of Health in discovering the habitat of tuberculous cases, and in various other ways; on the other hand, the Board of Health most willingly and efficiently aids the Association in disinfection, removal of patients when possible and in other ways.

Further, the Association endeavors to aid poor consumptives to obtain entrance into the Rutland Sanatorium when cases are suitable, or to send them into the country. It also investigates those consumptives who return to the city from Rutland in connection with that institution, and endeavors to procure for them suitable employment.[1] This seems to your committee a very important fact of the work.

A new experiment initiated by this Association is the *Parker Hill Day Sanatorium*, which has been in operation during the last summer and which closes in November. In an orchard on Parker Hill rude structures and tents were erected, and here consumptives from the tenement districts of the city were provided for during the day. They were given lunches and dinner, medical supervision and nurses' care, and at night returned to their homes, to repeat the same thing the next day. This new departure has met the approval both of the public and the profession, and has accomplished two objects, — the improvement of the patient's condition and his education, and, through him, that of his family, in the open-air cure and hygienic modes of living. It is hoped that this experiment may be continued another year. From the time of opening in July until October 19, 110 cases were treated, with a daily attendance of 29. Seventy-one remained three weeks or over. Among the 110 patients treated, 51 showed a gain in weight, while fully one third definitely improved. There was, on the whole, a very gratifying diminution in cough and so forth. Nine were admitted to Rutland. Dr. David Townsend, the supervising physician of the camp, who has been largely instrumental in its success, will later give a more detailed account of its working and results.

This Association is constantly endeavoring to enlarge its efforts and make them more efficient, and will receive with gratitude all suggestions from the profession whereby this may be attained.

3. RESULTS ACCOMPLISHED.

The exact results obtained by the above-mentioned agencies cannot be determined, much less expressed in statistical form, yet in certain directions definite facts are available. In general it may be conservatively stated that the progress of the crusade has been most gratifying and gives very clear indications for future activities. Most

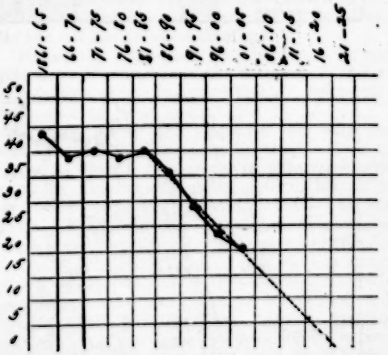


Chart 2. — Annual death-rate from consumption, per 10,000 inhabitants, by semi-decades, in Boston since 1860.

striking of all is the constant and relatively rapid fall in the death-rate due to consumption to be noted during the past fifty years. In 1858 the death-rate from consumption in Boston was 20.5% of the total mortality, the highest recorded in the statistics of the Board of Health. Since 1858 the percentage has shown an almost constant diminution, the percentage for the year 1904 being but 11.8 of the total mortality. This drop is more accurately and strikingly shown in terms of the rate per 10,000 inhabitants. In

[1] Discharged Rutland patients visited by Miss Tileston (volunteer visitor) in an effort to secure for them proper employment:

Number visited,	
Men,	89
Women,	86
Total,	175
Disposition:	
Left Boston before visit could be made (in most instances at the advice of the physician in Rutland),	40
Found to need no help	115
Number found to be in need of help,	20
Of these	
Employment was secured for	8
Admission secured to institutions for	4
Unavailing efforts to secure employment were made for	3
Efforts now being made for	5

1858 the death-rate from consumption per 10,000 inhabitants was 46.11, in 1904, 20.8. Similar figures from 1886 to 1904 present a decline from 40.08 to 20.82, practically 50%.

Chart 3, representing the death-rate from consumption per 10,000 persons in Boston, by wards, during the years 1884 to 1890 and Chart 4 for the years 1901 to 1903, show the marked decrease even more definitely than statistics.

The more rapid drop since 1880 is undoubtedly due to the discovery of Koch's bacillus in 1882, which made diagnosis more accurate and gave definite indication for prophylactic measures. The routine inspection, instruction, disinfection and support by the city authorities has undoubtedly been a prominent factor in the attainment of these brilliant results, public education possibly even more so. Inadequate as the method of

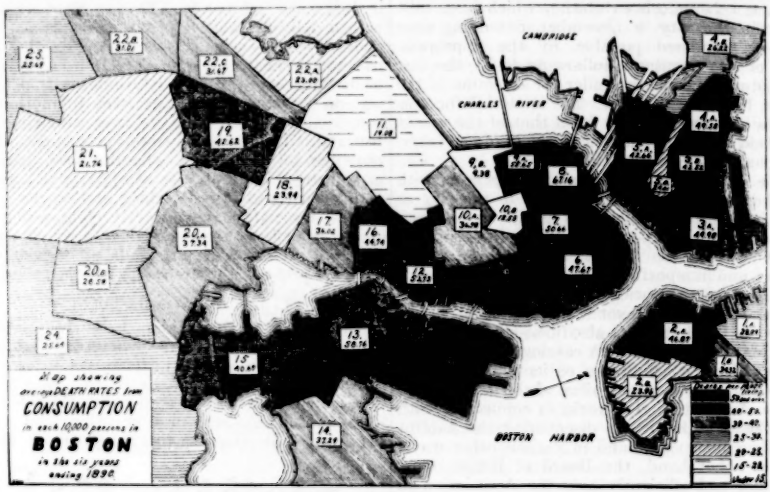


CHART 3.

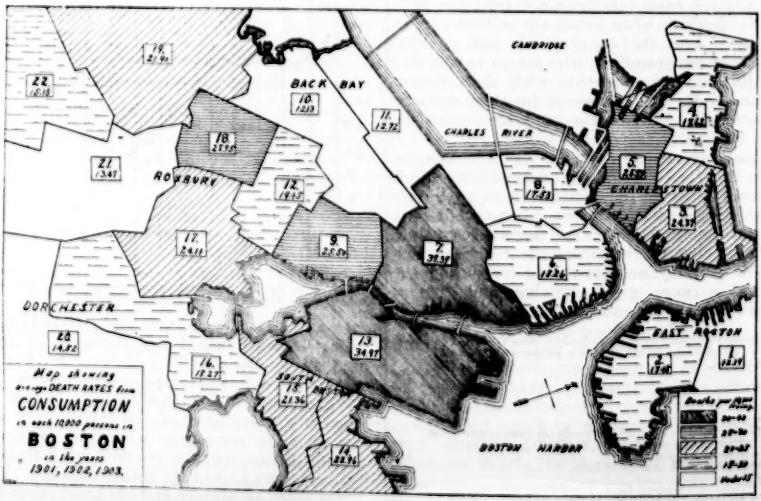


CHART 4.

statistical representation may be, probably the best idea of the work accomplished may be gained by reviewing the numerous efforts made during the year 1904. The report of the Board of Health for 1904 gives the following:

Number of cases of phthisis visited by the inspector, 1,414; number of disinfections done, 1,989; number of sputum examinations made, 3,115; number of cases found in the public schools, 10.

In similar manner work of the Boston Association for the Relief and Control of Tuberculosis may be summarized as follows:

SUMMARY OF THE RELIEF AND EDUCATIONAL WORK OF THE BOSTON ASSOCIATION FOR THE RELIEF AND CONTROL OF TUBERCULOSIS FOR THE YEAR NOV. 1, 1904, TO NOV. 1, 1905, THE LAST WEEK MISSING.

Number of lectures given,	79
Total attendance (approximately),	4,500
Number of physicians lecturing, 33; laymen 2,	35
Leaflets distributed,	20,000

Small tuberculosis exhibit first given in Mechanics Hall and afterwards sent to eight other New England cities.

Relief Work.

Number of patients visited by Miss Burgess in the year,	613
Disposition of patients visited:	
Gave instruction and advice to	317
Secured admission to private hospitals for	23
Sent to Day Camp on Parker Hill,	58
Sent to Public Institutions,	20
Secured aid from private charities for	58
Referred to District Nursing Association for continued nursing at their homes,	52
Referred to Board of Health for forcible removal or to correct sanitary abuses,	38
Could not be found at the address given,	37
Died before visit could be made,	10
	613

The various hospitals in Boston receiving phthisis treated during the year 1904 a total of five hundred and eighty-six (586) cases. At the dispensaries and the out-patient departments of the hospitals in the city, three thousand six (3,006) received treatment. These latter figures are inaccurate since many undoubtedly visited more than one clinic.

4. RECOMMENDATIONS.

As the present condition of the tuberculosis work in this city has already been given in detail above, only brief reference will again be made to these various efforts in making certain recommendations or comments in connection with them. What is being done in the control of tuberculosis may be classed under two heads: First, municipal; and, second, individual and voluntary.

The Boston Board of Health. — The municipality in dealing with tuberculosis is working in five distinct directions:

First, *compulsory notification and registration of all cases.* Tuberculosis having been placed on the list of contagious diseases the state law at once becomes operative with regard to it, which requires the reporting by the physician of all contagious diseases occurring in his practice. In order that systematic and effectual control of tuberculosis may be exercised, the cases and their habitat must be known, and hence the reasonableness and necessity of notification, in which there seems to be an increasing concurrence of opinion in the profession. It is with the consumptive poor in the crowded tenement-house districts that the greatest danger of communicating the disease exists, and where the interference of the Board of Health is principally required. The well-to-do consumptive, with a responsible physician, can be safely left to himself. The profession are, therefore, urged to co-operate with the Board of Health by reporting every case of tuberculosis as soon as they are reasonably sure of their diagnosis. This is fundamental in any attempt to control the disease. The increasing number of notifications indicates that they are more fully recognizing their duty in this respect, although it is evident that there is still great room for improvement from the fact that in the last year there were 1,269 deaths reported from tuberculosis, and of these 695 had never been previously reported by any physician or institution. It may be suggested that every physician who neglects to report a case of tuberculosis in his practice until he reports the death should be reminded by the Board of Health of his dereliction of duty.

Second, *disinfection.* On the death of the tuberculosis patient or his removal, the room occupied by him is disinfected by the Board of Health. The tenement-house dweller, however, changes his abode so frequently that it is often difficult to trace a consumptive and know when he has left his previous dwelling.

Hence the suggestion that landlords be compelled to thoroughly clean a tenement, to the satisfaction of the Board of Health, before being permitted to let it again.

Third, *removal and isolation* of dangerous and advanced cases of tuberculosis. This the Board of Health does so far as accommodations permit. There is a pressing need, as we all too well know, of greatly increased provision for such cases. A consumptive hospital is imperatively needed in this city. For several years this fact has been constantly agitated and the city importuned to provide adequate accommodations for hopeless cases. Until the numberless foci of infection caused by advanced cases in the tenement-house regions are eliminated by the removal and isolation of such cases, we can never hope to successfully combat the disease. Whether a municipal consumptive hospital shall be established on Long Island, as has been ably advanced by Professor Councilman and others, or at some inland, outlying portion of the city, as West Roxbury, for instance, may be of secondary consideration, but it is of the first importance, that at once, somewhere, there shall be established a consumptive hospital, and the profession are urged to actively interest themselves in this matter. In this connection the recommendation may be made, that cases of tuberculosis in the general hospitals, admitted for some acute exacer-

bation in the course of the disease or developing tuberculosis while under treatment for other diseases, should be isolated in a separate ward.

Fourth, *prohibition of promiscuous spitting.* For several years such prohibition as applied to the floors of public buildings, stations and street cars has been declared by the Board of Health and is still in force. This has been more or less effective rather from its moral influence than from any great number of punishments for its infringement. Whether it is possible to include in the prohibition spitting on the sidewalks in a large city like this, as is done in smaller places, as in Brookline, for instance, is a question. It is evident that trailing skirts and foot wear may carry infecting sputum into the houses. The provision of cuspidors in convenient places in stations, smoking cars and elsewhere in public places, is recommended. If the public are prohibited from promiscuous spitting it would appear reasonable and conduce to a more perfect observance of the present ordinance, to provide opportunity for depositing sputum in a safe and proper way. In this climate, during the colder months of the year, a large number of the moving public are afflicted with catarrhs, and it is a hardship not to afford them some provision for the deposit of their catarrhal secretions.

Fifth, the free *examination of suspected sputum.* While this is an exceedingly valuable aid to the private physician in the diagnosis of tuberculosis, there is the possible danger that he may depend too completely upon it, to the neglect of a careful clinical diagnosis. Early cases of pulmonary tuberculosis, as we know, often show no tubercle bacilli in the sputum, and if the diagnosis is kept in abeyance until they do appear, the case, in many instances, will have passed beyond the early stage. The importance of early diagnosis, of which so much of late has been said, is again urged upon the profession. If the symptoms and physical signs make the diagnosis reasonably certain, even though tubercle bacilli are not present in the sputum, the case should be reported and treated as such. Every case of tuberculosis discovered at an early period of its course and treated successfully and arrested, means one less advanced case with all its possible dangers.

The subject of *milk inspection* with regard to the possibility of conveying tuberculosis through infected milk, is not discussed here for the reason that the subject is still under investigation, and it is not yet conclusively proved that milk is any great source of tubercular infection.

The above are the present main lines of effort prosecuted by the Board of Health, and it is pertinent to ask if the work of this body can be usefully extended. First, however, it is eminently fitting that the appreciation of the profession in this vicinity should be expressed to the Boston Board of Health for the work it has already accomplished and is still pursuing in the control of tuberculosis, and to urge upon the profession to give the Board its earnest and active co-operation in its various lines of endeavor to stamp out the disease.

Two points particularly will bear emphasizing again: The notification of all cases of tuberculosis occurring in one's practice and strenuous personal effort in securing adequate means of isolation.

Two additional measures may be suggested as possible extensions of this work of the Board of Health. First, That in the school inspection, special attention should be given to the detection of tuberculosis among the scholars in co-operation with the teacher, and that the medical inspector should give a careful examination, or refer for examination, such pupils as manifest suspicious signs, as cough, etc., of a possible tuberculous infection. Second, workshop and factory inspection with reference to tuberculosis among the operatives. Such inspection may, perhaps, more properly come under the jurisdiction of the State Board of Health, or the State Police, so-called. It may not be feasible at present to institute such an inspection except at the request of the employer, but since it is well known that a tuberculous operative is not infrequently a prolific source of infection to those about him, if such an inspection were possible, or even if it were not a general one, if such cases as were reported by the overseer to be coughing and spitting could be examined, something might be accomplished towards controlling this frequent source of infection.

Tuberculosis dispensaries. — In New York City, Philadelphia and other cities in this country and abroad, separate dispensaries devoted solely to the treatment and relief of tuberculosis are in existence, and they have been found to be of great value not only in the treatment and supervision of the poor consumptives at their homes, but in the control of the disease. The New York Board of Health maintains such a dispensary under its immediate supervision, while others in that city are conducted in connection with the hospitals. It is suggested that the establishment of such a dispensary, which shall give its entire attention to tuberculosis, may be feasible in this city and prove as valuable in the control and relief of the disease as has been the case with like institutions elsewhere.

In conclusion, your committee desire to call attention to the lack of provision for consumptive children, both in the early and advanced states of the disease. The Boston Association petitioned the trustees of the Rutland Sanatorium to set apart one of the new buildings for this purpose, but, up to the present time, they have not seen their way clear to do so. At present there are no adequate accommodations for such children. If we shall, in the near future, as is earnestly desired, obtain a municipal consumptive hospital, a ward or building should be set apart for children suffering from pulmonary tuberculosis, and, in the meantime, your influence is asked in the effort to obtain accommodations at Rutland for such tuberculous children as are in the earlier stages of the disease. Furthermore, children suffering from surgical tuberculosis should be provided for in sanatoria at the sea-

side, as is so successfully done at Sea Breeze on Coney Island, and in many places on the coast in Europe.

Your committee gratefully acknowledges the assistance rendered by Dr. Durgin of the Boston Board of Health and Mr. A. M. Wilson, secretary of the Boston Association for the Relief and Control of Tuberculosis in the preparation of this report.

SYMPOSIUM ON CLINICAL PATHOLOGY.*

THE RELATION OF CLINICAL PATHOLOGY TO ACTUAL PRACTICE.

BY LOUIS FAUGERES BISHOP, A.M., M.D., NEW YORK,
Physician to Lincoln Hospital.

By actual practice we mean the work of the general practitioners who make up the great majority of the profession of medicine, who are not engaged in the practice of an exclusive specialty and who are not connected with teaching institutions or active laboratory work. These are the men who actually take care of the greater part of the community. It is a frequent experience to find that men not at all widely known to the medical profession have large practices among influential and important people, and it is a well-known fact that many men whose names are well known in medical literature and who are active in hospital work have but little practice among persons outside of the dispensary class.

The problem is to make clinical pathology available to the men who actually do the bulk of the practice of the city. Clinical pathology has been too much in the position of a consultation branch rather than a help in every-day work. Too many men call in technical examination only when the case seems obscure or when the patient is very ill.

Laboratory work is really only an extension of the physical examination employing the microscope as we employ stethoscope, and testing the composition of the blood as an extension of the same operation that was begun when we looked at the color of the mucous membranes. The bacteriology of the human body in health and disease should become a matter of routine observation rather than one laid aside for special occasion. The systematic examination of patients over a considerable period of time thus ascertaining the physiologic and bacteriologic habit of the individual should become a more common practice.

The most obvious solution of the problem that immediately presents itself to any man is that he should take a course in laboratory work, and then make a practice of carrying on these observations for himself.

There come to mind several men who have taken the course and no doubt it was greatly to their benefit, but not one of them has actually carried on the work. The practice of medicine is too complicated an occupation to allow of the proper atmosphere for laboratory work. There is too much of the social and personal required to allow the combination of the two kinds of work in the general practitioner. The only element in practice that interests the patient is the one factor of treatment and recovery from disease. And the most successful men from the point of view of having satisfactory practices are those who concentrate most of their attention upon the treatment of their patients, keeping the rest much in the background.

So it is practically impossible for these men to do clinical pathology themselves. Thus they have fallen into the habit of neglecting it, except in cases where it was evidently important and then sending single specimens or two to an eminent authority for an opinion. The whole procedure is too expensive to be employed in a routine way with all the patients. To do this for all his patients it is necessary to obtain the co-operation of men who have neither reached the height of reputation as pathologists nor who have obtained the position of established practitioners. These men are found in these days among the graduates of our hospitals, particularly those who have had a pathologic service. These men are glad for a time to continue the work they have been doing for the hospital for the benefit of practitioners. The health department has placed several operations of clinical pathology at the free disposal of the profession, but can only concern itself where infection is involved.

The trouble now is that the men in actual practice, the men who are treating the majority of the people who live on the same block that you or I do, are not at all awake to the value of clinical pathology used in a routine way, particularly in obscure and chronic cases. The obscurity has sometimes been increased by examinations made by druggists and commercial chemists, whose reports are often useless for clinical purposes.

My own conclusions are, and I speak from personal experience as an actual practitioner, that the relation of clinical pathology to private practice has not been satisfactory. Until a year or more ago, when I decided definitely to go back to the study of the purely technical side of medicine, having been deeply absorbed in clinical work, I really did not know, as I do now, of how much practical value laboratory work has come to be.

The cure for the present unsatisfactory relation is found first in dissemination among practitioners of the knowledge of the actual value of the findings of the laboratory in indicating treatment of patients. Second, it is found in building up the confidence of the profession in the work of the younger graduates of the pathologic services of our hospitals and in separating routine work, such as these men are perfectly capable of doing, from the higher class of work which calls for the expert knowledge and opinion of established specialists in clinical pathology.

The established specialist whose life is given up to investigations, to teaching and consulting,

*Read before the Medical Association of the Greater City of New York, Nov. 13, 1905.

should and does stand in the position of higher authority that he deserves. He must always be called upon to pass judgment upon obscure questions that arise in great abundance from the routine work of the younger men. The man in active practice should be in touch with the group of recently trained workers, who should carry on routine examination of all his patients. He should also be in touch with a pathologist of established reputation to pass upon such questions as arise, when an opinion as to the significance of findings is necessary.

I speak from the point of view of a practitioner and not of a pathologist, and I leave it for those who follow to point out the details of cases, in which clinical pathology is important in actual practice. I would merely add, for the benefit of any general practitioner who may be still deep in the purely clinical rut, that the free use of clinical pathology will add new interest to his professional work.

THE PRESENT ATTITUDE OF BLOOD EXAMINATION FOR DIAGNOSTIC PURPOSES.*

BY FREDERIC E. SONDERN, M.D., NEW YORK.

THE evolution of hematology during the last decade has been so pronounced, that at the present time an accurate knowledge of the blood condition is considered essential in the diagnostic and prognostic conclusions in all but the most trivial cases. While an enumeration of the blood changes noted in the different diseases and an opinion concerning their significance are not possible in the time at my command, there are quite a number of pathological processes in which an examination of the blood is of much practical value to the clinician.

The present more intimate knowledge of the minute differences as well as of the relative changes noted in the various forms of anemia has unfortunately shed little or no light on the etiology of these diseases, but has greatly facilitated their diagnosis, as well as the differential diagnosis. Thus, simple anemia, secondary anemia, pernicious anemia, splenic anemia and Hodgkins' disease can be differentiated with greater precision than the former less accurate knowledge of the blood changes allowed.

In the different forms of acute and chronic leukemia, recent work has taught much and justifies dissatisfaction with the present clinical classification of these conditions. Acute lymphatic leukemia as well as the recently described acute myeloid form of the disease, present a clinical picture simulating an acute infectious process, and it is by means of the routine blood examination that the differential diagnosis is now most frequently made, improper surgical procedures prevented and the fatal prognosis learned at the earliest possible moment.

It is not only in the blood diseases proper, if they may be so termed, that the examination of the blood is useful. In acute febrile conditions, when the clinical picture is not yet sufficiently pronounced to justify a diagnosis, a routine examination of the blood is often a guide and always a comfort. This examination shows the degree of anemia if any, and a search for plasmodia, a Widal test, an enumeration of leucocytes and a differential count of the latter, while they may not establish the diagnosis, they at least confine it within narrower limits and often exclude feared grave conditions.

The value of finding the characteristic organisms in malaria, filariasis, tripanosomiasis and relapsing fever needs mere mention. The increase in the relative number of large lymphocytes noted in malaria is an additional stimulus to repeated search if plasmodia are not found at once. In the event of coma, the knowledge that meningitis and brain abscess are always accompanied by a leucocytosis and relative polynuclear increase, that uremic, post-epileptic and diabetic coma sometimes show leucocytosis and that narcotic or alcoholic poisoning, hysteria and tumor have no accompanying leucocytosis, is also of diagnostic value when combined with the clinical observation.

The early stages of scarlet fever often present diagnostic difficulty; but when it is recalled that this disease always shows a pronounced leucocytosis and relative polynuclear increase, it is more readily distinguished from several other eruptive conditions most easily confused which do not present this characteristic.

In typhoid fever, we had hoped that the early diagnosis would have material aid from the Widal serum reaction. While this anticipation has been but partly fulfilled, owing to the delayed response to this test in many cases, the fact that uncomplicated typhoid shows no leucocytosis and a relative lymphocytosis on differential count of leucocytes is an aid not to be overlooked.

In pneumonia, a consideration of the blood picture is often of the greatest value in both diagnosis and prognosis. It has long been conceded that in central pneumonia and in other cases where the general symptoms are present but the physical signs are not characteristic or wanting, the existence of a pronounced leucocytosis often justifies the diagnosis. While scarlet fever or a suppurative process will present the same blood characteristics, the clinical aspect of the case seldom admits confusion on this account.

In the prognosis of pneumonia, it has long been known that the absence of a leucocytosis is a very grave and usually fatal sign. For several years not only the leucocyte count, but also the differential count of leucocytes in pneumonia have had my particular attention. I will not enumerate the details of these observations, but simply quote the conclusions they seem to justify.

The increase in the relative number of polynuclear cells is a direct indication of the severity of the toxic infection and *the degree of leucocytosis an absolute indication of the body resistance toward the infection.* In other words: (1) Slightly

*Read before the Medical Association of the Greater City of New York, Nov. 13, 1905.

increased polynuclear percentage indicates slight toxic infection, irrespective of the leucocyte count. (2) Greatly increased polynuclear percentage indicates severe toxic infection, irrespective of the leucocyte count. (3) Slight leucocytosis with slight polynuclear increase indicates fair resistance and a slight toxic infection. (4) Pronounced leucocytosis with slight polynuclear increase indicates good resistance and a slight toxic infection. (5) Slight leucocytosis with pronounced polynuclear increase indicates poor resistance and a severe toxic infection. (6) Pronounced leucocytosis with pronounced polynuclear increase indicates good resistance and a severe toxic infection. (7) Absence of leucocytosis with pronounced polynuclear increase indicates no resistance and severe toxic infection; and a falling leucocytosis with a rising polynuclear percentage indicates diminishing resistance and increasing toxic infection. (8) Falling leucocytosis with a falling polynuclear percentage indicates diminishing toxic infection only, or recovery, in other words.

Blood serum reactions, agglutinations, Pfeiffer's phenomenon and similar work on which scientists are at present engaged are among the most important researches in medicine to-day, but the results are not yet sufficiently precise to find application here.

In surgery as in medicine, the examination of the blood has found application in diagnosis and prognosis.

The arbitrary rule, that no surgical procedure is to be undertaken when the percentage of hemoglobin is below thirty should no longer adorn our textbooks. Determination of the amount of hemoglobin in these specimens poor in coloring matter is a very crude matter, and opinions concerning any operation in cases of severe anemia are much better when based on a complete blood picture, than if a necessarily crude estimate of the amount of hemoglobin alone is considered. The chlorotic girl with 30% hemoglobin, 4,500,000 red cells, a normal leucocyte count and perhaps a slight relative lymphocytosis on differential count is certainly in much better condition to withstand an imperative operation than the case of secondary anemia, with 50% hemoglobin, but only 2,000,000 red corpuscles, a marked leucopenia and a high relative lymphocytosis.

Cryoscopy of the blood is a recognized method for determining the functional activity of the kidneys, and while some pelvic circulatory disturbances simulate the picture of impaired renal function, the method in conjunction with a proper urine analysis is decidedly useful.

Blood cultures as diagnostic and prognostic aids have also increased very much in value. Present knowledge seems to indicate that the former negative results can be ascribed to undue concentration and consequent bactericidal action of the shed blood. With proper technique and sufficient dilution in fluid media, the method is most useful, particularly in septic conditions. Its practical use demands expert technique and full bacteriological laboratory equipment.

The physiological changes in the blood due to pregnancy and parturition are somewhat better understood, so that findings due to complicating disorders are of more value than they were, though published observations are still meagre.

One of the most important spheres of usefulness of blood examination in surgery is its value as a guide to the existence and severity of an inflammatory process, to the presence or absence of a purulent exudate, and to the resistance offered by the economy toward the toxic infection. Continued observation bears out the opinion expressed before the Surgical Section of the Academy on Feb. 3, last, and I can but repeat the conclusions then voiced.

(1) A relative percentage of polynuclear cells below 70, with an inflammatory leucocytosis of any degree, excludes the presence of gangrene or pus at the time the blood examination is made, and usually indicates good body resistance toward the toxic infection.

(2) An increased relative percentage of polynuclear cells, with little or no inflammatory leucocytosis, is still an absolute indication of the inflammatory process and the percentage is a direct guide to the severity of the toxic infection. As above stated, in all the cases of which I have clinical record, no pus or gangrene was ever observed with a polynuclear percentage below 70. In children, where the polynuclear percentage is normally lower than in adults, I have seen pus or gangrene with the percentage as low as 73. In adults, a purulent exudate or a gangrenous process is decidedly uncommon with less than 80% of polynuclear cells and the probability of their presence increases with the percentage. Eighty-five per cent or over of polynuclear cells I have never seen without a purulent exudate or gangrenous process irrespective of the leucocyte count. Ninety per cent of polynuclear cells has always indicated a very severe degree of toxic infection and while I had one specimen of 95.2% where recovery followed operation, all other cases in which the percentage was over 94.5 resulted fatally. It is not wise, nor will I attempt to establish narrow arbitrary limits, but I am quoting the above figures from more than 1,400 surgical cases studied in this way.

This second type, of increased polynuclear percentage, with little or no inflammatory leucocytosis, is the most interesting one, as it particularly demonstrates the value of the procedure I am advocating, and the cases are usually in urgent need of operation on account of poor body resistance.

(3) An increased relative percentage of polynuclear cells with a decided inflammatory leucocytosis. Most of the cases of inflammatory lesions, with or without purulent exudate, meet the specifications of this class. Here, as in the last series, the percentage of polynuclear cells was found an accurate guide to the status of the inflammatory lesion, and the figures quoted above apply here as well.

The body resistance toward the infection is a most important point, and while the clinical

manifestations are usually a good guide, this is by no means invariable. Good resistance, marked leucocytosis; poor resistance, little or no leucocytosis, is the old rule. As stated, I believe the leucocytosis, with a given percentage of polynuclear cells, is the best indicator of the body resistance toward the toxic infection.

For example, a patient has an inflammatory lesion without purulent exudate and a polynuclear percentage of 75. If his leucocyte count is 25,000 the body resistance is much better than if the count is 10,000. Another case has an acute inflammation with abscess and a polynuclear percentage of 84. If the leucocyte count is 30,000 the body resistance is much better than if the count is 15,000. The severely toxic patient with 92% polynuclear cells is combating his disease with greater energy and success if he has 40,000 leucocytes in 1 cmm. than if they are only 20,000; and should the leucocyte count be 7,000, this is a clear indication of an absence of all systemic effort to overcome the infection. My records show many examples of the truth of the above assertion.

The value of iodophilia in estimating the character and severity of an inflammatory process is, I believe, quite secondary.

To prevent an accusation of undue reliance on any one aid, I will close with a good motto: "The man who makes every diagnosis in the laboratory is as short-sighted and liable to grave error as the man who ignores microscope and test tube."

LABORATORY AIDS IN THE DIAGNOSIS OF DISORDERS OF THE GASTRO-INTESTINAL TRACT.*

BY E. E. SMITH, M.D., PH.D., NEW YORK, N. Y.

I SHALL not attempt a systematic presentation of my subject this evening but, rather, content myself with a discussion of such isolated facts as seem to me of special interest.

If you are willing, we may extend the subject to include the entire digestive tract.

The laboratory examination that is most commonly of value in connection with the pharyngeal mucosa and the tonsils is the bacteriological examination of its exudates. A word of precaution is necessary in connection with the diagnosis of diphtheria. When the morphology is typical, the diagnosis from serum cultures is quite conclusive. Occasionally, however, it happens that the procedure is uncertain. Let me mention such an instance that occurred only recently. I was much puzzled that a throat which presented what seemed to be a diphtheritic ulceration showed, bacteriologically, only a bacillus not possessed of the typical morphology of the Klebs-Lœffler. Although reported by me as negative, it was regarded by another bacteriologist as probably an atypical form of the diphtheria bacillus, while the municipal laboratory reported diphtheria without qualification, though duplicate cultures were conflicting. Antitoxin was given with some subsequent improvement. Attention was finally directed to an eruption which had appeared before the administration of antitoxin. A consideration of the case along these lines established indisputably the diagnosis of the secondary stage of syphilis. The patient had but shortly before returned from Vienna and presented a clinical picture with syphilitic ulceration of the throat easily mistaken for a time for true diphtheria.

Fortunately, we have other aids to diagnosis in just such cases as this. I refer to the examination of smear preparations made directly from the ulcerated surface. At least two diseases are differentiated from true diphtheria by a competent examination of such material, namely, Vincent's angina by the recognition of the characteristic fusiform bacilli and syphilis by the recognition of the spirocheta pallada. It is yet too early to say with certainty that this last organism is the cause of syphilis but so far, at least, we seem to be deriving material aid from a knowledge of its presence. In connection with the mouth, let me remind you that the existence of gonorrheal stomatitis has been reported and that the gonococcus is demonstrable in the discharge of the ulcers.

The examination of the stomach contents, either vomited, obtained in gastric lavage or removed after a suitable test-meal, is of unquestionable value and should be more generally practised, especially in chronic gastric disease. There is one class of cases, however, which emphasizes the value of systematic examinations of patients, even though they may present pretty well localized symptoms. I refer to those cases of persistent vomiting due to a condition of acid-intoxication. For several years, this origin of the exciting cause of such attacks has been recognized in some cases of the persistent vomiting of childhood. At the present time evidence is accumulating to show that not infrequently it is the cause of persistent emesis in adults. The associated clinical manifestations in such cases may be varied but the occurrence of attacks of persistent vomiting lasting usually several days is constant. As an example, I may mention a case of melancholia with associated high tension and renal congestion. The first impulse was to attribute the vomiting to uremic intoxication, but examination of the urine showed the presence of acetone and diacetic acid, affording abundant evidence of acid-intoxication, due, in all probability, to inanition because of the mental state. In such cases the attacks may be prevented by a proper dietary and aborted by the heroic use of alkaline medication.

Riegel has emphasized the value of differentiating between the gastric conditions of hyperacidity, alimentary hypersecretion and continuous hypersecretion. The term "hyperacidity" is used to indicate hyperchlorhydria without hypersecretion, the term "alimentary hypersecretion" to indicate an increased flow of gastric juice as a result of digestive stimulation; and, finally, the term "continuous hypersecretion" to indicate a

*Presented at the meeting of the Medical Association of the Greater City of New York, on Nov. 13, 1905.

flow occurring without the stimulant of the presence of food. The differentiation is made from the amount of stomach contents removed after the test breakfast, its acidity and the absence of gastric secretion during starvation.

Right here let me emphasize the importance of removing the stomach contents with the tube, with patients who can readily induce emesis. I find that the material removed without the tube may lack entirely the characters of the mixed contents, being less in quantity and in acidity. Indeed, I have, on more than one occasion, obtained in this way material wholly neutral to litmus in cases which show a normal acidity when removed by tube.

To return to the conditions of increased acidity and secretion, you well know that they constitute a large proportion of the gastric disorders with which the physician has to deal. If the stomach contents after the test-breakfast is not increased in volume, that is, is two ounces or less in quantity and constantly, or even generally, has an excessive hydrochloric acidity, say seventy or more, the condition is one of simple hyperacidity, usually readily amenable to treatment. If, on the other hand, the volume is increased and this increase usually carries with it an increased hydrochloric acidity, it is important to determine whether such increase is due to an increased flow and finally, whether the increased flow is simply alimentary or is continuous, occurring independently of the stimulating action of food. First, as to whether the increased volume is due to an increased flow. The stomach normally passes a portion of its contents into the duodenum, even during the first hour of digestion. Failure to do so may lead to the presence in the stomach of an abnormal amount of contents, this occurring in pyloric stenosis and dilatation and gastric motor insufficiency. These conditions, then, must be excluded before concluding that the increase of volume has resulted from an increase in gastric secretion. Having concluded that secretion is increased, the question of whether it occurs only under the stimulus of food or without such stimulus is determined by examining the stomach contents after fasting. This is accomplished by gastric lavage at night and the withdrawal of any contents the following morning. In continuous hypersecretion, it will be found that the stomach contains a goodly amount of liquid containing hydrochloric acid and gastric ferments.

It is not to be expected that every patient with acid stomach shall be subjected to the searching methods outlined. The clinical symptomatology is usually sufficiently suggestive to permit of treatment for the less persistent condition of simple hyperacidity, but where such treatment is inefficient or efficient only temporarily, the more accurate methods outlined are certainly called for. In cases where even an approach to scientific exactness is claimed, the analysis of the gastric contents is imperative, even if the clinical symptoms are not pronounced.

It may seem to you that I give unnecessary emphasis to this point. If, however, you will examine so important and valuable a scientific investigation as that published in Bulletin 84, Part I, of the Division of Chemistry of the United States Department of Agriculture, you will find need for such emphasis. It is an investigation of the influence of boric acid and borax on digestion and health, conducted by the government upon a large and expensive scale. It would seem that such a research should be planned to yield results as definite as possible. As you know, the use of borax and boric acid, as preservatives in food, is now condemned by government officials because of the conclusion reached in this investigation, namely, that these substances are deleterious to health through the production of disturbances of digestion.

It may interest you to know upon what such an important conclusion is based. The report informs us that a total of 5,085 samples of food, urine and feces have been analyzed, and that 6,425 record sheets of the work have been kept. It further informs us that the volume of work done is even greater than these figures would seem to imply; and yet we search in vain for an examination of any kind that was made of the stomach contents. The voluminous records tell us that the ratio of food consumed to body weight is unchanged; that there is no effect of the preservatives upon the number of corpuscles and the quantity of hemoglobin in the blood; that there is no effect of the preservatives upon the composition of the feces; that there is no harmful effect upon the nitrogen, reaction, quantity, albumin and microscopic bodies of the urine; that there is only slight effect upon the metabolism of nitrogen; that it effects some increase in the metabolism of phosphoric acid; that it produces no disturbance in the metabolism of fat; that its administration seems to interfere slightly with the oxidation of combustible matter in the food and that it increases, somewhat, the elimination of solids. All of these things it tells us and substantiates its conclusions by a multitude of analyses. When, however, we come to indications of the deleterious action, let me read to you the character of the evidence upon which the conclusions of this, the most important part of the investigation, are based. I quote from the report: "The medical symptoms of the cases, in long-continued exhibitions of small doses or in large doses extending over a shorter period, show in many instances a manifest tendency to diminish the appetite and to produce a feeling of fullness and uneasiness in the stomach, which in some cases results in nausea, with a very general tendency to produce a sense of fullness in the head, which is often manifested as a dull and persistent headache. In addition to the uneasiness produced in the region of the stomach there appears in some instances sharp and well-located pains, which, however, are not persistent. It appears, therefore, that both boric acid and borax . . . create disturbances of appetite, of digestion and of health."

Let it be understood that I do not criticize in

any way the conclusions reached. I do regret that such important conclusions were reached upon such incomplete evidence, especially when the complete evidence could have been so readily obtained. Investigations of this character, undertaken with the opportunities which were at hand and with the technic available for the determination of gastric conditions,—such investigations should have afforded us more than the indefinite symptomatology that is recorded. It is presumable that the irritating action upon the gastric mucosa resulted in these cases in the production of gastric hyperacidity and even perhaps of hypersecretion. How much more conclusive it would be if we knew definitely whether this were so or not.

When investigations of such importance, undertaken with the co-operation of many well-known scientists, ignore the aid afforded by gastric analysis, do you not agree that the value of this procedure requires emphasis? Even more than all this is the failure to suggest this defect among the great number of criticisms, both for and against, which the work has called forth.

The aid afforded by laboratory examinations is probably as well, possibly better, appreciated in gastric than in intestinal conditions. Most physicians make much of the macroscopic inspection of the stools but relatively few realize the value of extending the examination further. Let me suggest to you that the microscopic examination of this material may well have a place in your routine. Examined directly, it rarely shows the presence of pathologic admixtures unappreciated by the naked eye but it may reveal the presence of a parasitic invader either directly or from the ova. In cases where the digestive functions are overtaxed, either because of excessive eating or because of diminished functional ability, the presence of abnormal amounts of undigested and partially digested food residue is readily recognized, even without resorting to the very special methods advocated by Schmidt and Strassburger. I question whether the differentiation of the fats is of certain value in locating the lesions productive of defects in fat saponification and absorption. Such examinations are certainly of importance in scientiffc research but I question whether at present the results can be interpreted with sufficient certainty to be relied upon in diagnosis.

I always examine microscopically a portion of the feces stained with iodine and find that it is of considerable value in acute or subacute disturbances to know of the presence of the blue staining butyric acid bacillus, since in these cases antisepsis by the aid of acetozone, both by mouth and high enema, is of unquestionable value. It is possible that in the future we shall resort to routine quantitative estimation and qualitative differentiation of the bacterial flora of the feces, but I cannot report sufficient progress in this direction to advise its attempt in clinical work at the present time. Special bacteriological examinations are, however, undertaken with profit, notably the isolation of the typhoid bacillus which is proving of diagnostic value.

A procedure which has attracted much attention in clinical diagnosis during the past two years is the recognition of the so-called occult blood in the feces. By means of a delicate chemical test it is possible to detect blood so modified by the gastro-intestinal processes as not to be recognized by the microscope. The patient's diet must be free from meat and fish. The test should not be limited to a single specimen but a series of observations should be made. It is thus possible to determine whether occult blood is constantly absent, constantly present or occasionally present. The lesion may be in any part of the alimentary tract.

Occult blood has the same significance as visible hemorrhage. It is constantly present in cancer, intermittently in ulcer and is absent in gastritis, hyperacidity, hypersecretion and the gastric neuroses. Its occurrence is an aid in the diagnosis of a suspected typhoid. Aside from the diagnostic value of the test, it is of value in indicating the therapeutic action of remedies in gastric ulcer.

I wish to advocate the examination of bile where it is available. It has long seemed to me probable that we have an albuminocholia similar to albuminuria, this being suggested by a consideration of the factors leading to the formation of pure bilirubin-calcium calculi in the intrahepatic bile ducts. This view has received support in another connection, by observations of Brauer in regard to such an occurrence.

In closing this fragmentary presentation of an important subject, permit me to emphasize the importance of the histologic examination of all suitable material, whether connected with the alimentary tract or from other parts of the body. Its diagnostic value is at times unexpectedly considerable. Thus, in a series of examinations of appendices, reported at the meeting of the Pathological Society last week, 5% revealed the existence of primary carcinoma, a condition usually regarded as rare. In the face of such facts the interests of the patients demand that these possibilities should not be ignored.

ON SOME RECENT ADVANCES IN URINOLOGY.*

BY LOUIS HEITZMANN, M.D., NEW YORK.

No subject in clinical pathology is of greater importance than that of urinology and there are probably few practitioners of medicine who do not make use of urinary analysis at some time or other. Advances are constantly made in this branch of medicine as in all others, and yet the practical value obtained from examinations of urine as generally carried out is not as great as it could be if the examinations were conducted more carefully.

Of late years great stress has been laid upon

* Read before the Medical Association of the Greater City of New York, Nov. 13, 1905.

different methods for ascertaining the functional efficiency of the kidneys, but as no individual one has been universally applicable or successful in every instance, new methods are constantly introduced. The one which has in recent years been more frequently employed than any other is cryoscopy; this is the determination of the freezing point of urine and blood, which varies in proportion to the number of molecules a solution contains. At first Beckman's cryoscope was almost exclusively used for this purpose, and surgeons, especially abroad, proclaimed the instrument to be perfectly accurate and the method to be the best upon which to rely in ascertaining whether one kidney works properly in cases in which the second kidney was known to be diseased and indications for its removal were present. Very soon, however, inaccuracies were reported, and now another instrument, Zickel's pectoscope, is claimed to be the best.

As the apparatus necessary for obtaining the freezing point of urine and blood is not always at hand, and extensive experiments have shown that cryoscopy, although undoubtedly of value in some instances, is not entirely trustworthy, other methods were resorted to for determining the functional capacity of the kidney. Of these, the methylene-blue test, the phloridzin test and the toxicity test should be mentioned. In the first, methylene-blue is injected into the tissues and normally appears in the urine in from fifteen to thirty minutes, while in diseased kidneys its excretion is more or less delayed. After the injection of phloridzin subcutaneously, sugar soon appears in the urine in healthy individuals, its excretion being considerably diminished or absent in diseased kidneys. Neither of these tests is at all reliable and the toxicity test still less so. In health, urine is poisonous when injected into animals, such as rabbits, though this toxicity varies even under normal conditions. In nephritis it is diminished, and the urine is claimed to be non-poisonous when the renal lesion is extensive.

Electric conductivity of the urine is another method which has been employed, but found to be of little or no practical value. Recently, however, Kolischer and Schmidt have revived it, and consider the method a very sensitive one provided a stain were used which would remain inert to the disassociating influences of the electric current. Indigo-carmine was found to meet the required indications; its introduction would always lower the conductivity. Their experiments showed that the electric conductivity in diseased kidneys was increased much beyond that observed in normal specimens and correspondingly decreased when even the slightest traces of stain appeared in the urine.

It is quite evident that no surgeon should determine upon the removal of one kidney before he has satisfied himself of the functional efficiency of the other kidney, but no unanimity as to the method to be used has as yet been attained. No instrument is more accessible to the physician than the microscope, but so far the general results obtained by microscopical examination have been far from satisfactory. Yet the microscope, when properly used, is an aid in the diagnosis of many diseases in which the clinical symptoms are vague. Most physicians still consider it of secondary importance only in urinary analysis, and after they have made their more or less extensive chemical tests, rapidly look for casts in the urine under the microscope and are satisfied when they have been able to determine the presence or absence of casts.

The reasons for this unsatisfactory condition are plain, when we look at the manner in which such examinations are conducted. A large drop of urinary sediment is placed upon a slide and without taking the trouble to cover it with a cover glass, is rapidly examined with a low magnifying power, such as a two-thirds lens; in most cases it is deemed unnecessary to apply a higher magnifying power at any time. The result of such a cursory and, to say the least, insufficient and superficial examination is quite frequently the discovery of so-called tube-casts without the presence of any other evidence of an inflammation, where in reality cast-like structures but no true casts are present. These structures may be mucus, extranenous fibers, large flat epithelia, mycelia or other substances, but are called casts, when a higher magnifying power and a more careful examination would at once show the error of such a diagnosis. A urinary sediment, which is obtained either by centrifugalizing or preferably by allowing the urine to settle for at least six hours, should never be examined without the use of a cover glass nor with a lower magnifying power than 400 diameters. In the majority of cases the old method of sedimentation by allowing the urine to stand at rest in a clean, well-stoppered bottle or a conical vessel in a cool place is better than the use of the centrifuge, as the latter is more liable to lead to mistakes in diagnosis than the former. The Abbé condensor, which is almost invariably used in these examinations, should be removed as the features become more plainly visible without it. When these precautions are observed better results in diagnosis will be obtained than is the rule at the present time.

In order to determine the functional efficiency of one or both kidneys, the urines should be obtained separately from both kidneys by means of the cystoscope and ureteral catheter, and chemical and microscopical examination be conducted separately with each specimen. It is not sufficient to simply look for the presence of casts and lay no stress upon the presence of other features, but on the contrary every feature is of importance for a correct diagnosis. In nephritis casts are by no means present in every case, and many cases in which true casts are never at any time seen, escape detection and are either not diagnosed at all or too late to save the life of the patient. Not infrequently the autopsy gives the first indication of the true nature of the case. No less an authority than Dr. Tyson, in a discussion of one of the author's papers, said

"that many of the most serious cases of chronic interstitial nephritis had not, during the life of the patient, shown by urinary examination anything at all comparable with the seriousness of the disease." On the other hand, mistaken diagnoses of casts can work serious harm. It is not at all rare to hear of the presence of granular, fatty and even wavy casts in the urine of persons who never have had any symptoms referable to the kidney who are apparently perfectly well and whose urines do not contain any appreciable amount of albumin. These are the cases which are accountable for the fact that many physicians place little reliance upon microscopical urinalysis.

When the examinations are carefully conducted the microscope is undoubtedly of extreme aid in the diagnosis of many lesions of the genito-urinary tract. Not only can nephritis be positively diagnosed when true tube-casts are not present but also pyelitis, ureteritis, cystitis, prostatitis and other inflammations as well as suppurations, ulcerations and many other conditions. When a proper magnifying power is used, the first step should be to look for pus-corpuscles or leucocytes; these are the smallest granular corpuscles in a given case and although they may vary in size somewhat, they never do so to a great degree in the same case. As soon as formations about one third larger in diameter are found, the diagnosis of kidney epithelia from the convoluted tubules can be made. These epithelia will never be seen in normal urine, but only in pathological conditions of the kidney, and are usually the more abundant the severer the condition of the patient, although the numbers of the other features must always be taken into consideration. The presence or absence of a nucleus has no significance, as such a nucleus may or may not be seen in pus-corpuscles. Red blood globules, pus corpuscles and cuboidal epithelia from the convoluted tubules of the kidney, which in urine are usually round or oval formations, are perfectly sufficient for the diagnosis of a nephritis. Columnar epithelia from the straight collecting tubules of the kidney may also be seen, but usually only in the more intense cases. Casts need not be found at all in cases of interstitial nephritis, and when they are present, are usually quite scanty.

In acute nephritis red blood globules are seen in at least moderate numbers, while in chronic inflammations they are either scanty or entirely absent, but newly-formed glistening granules and globules, the fat-globules, secondary changes of the protoplasm, make their appearance in the pus-corpuscles and epithelia. Many cases of suspected nephritis or even hyperemia of the kidney, which perhaps show a trace or a faint trace of albumin in the urine, but which do not show true casts, can thus be readily cleared up.

It is not at all difficult to locate the pathological process in the genito-urinary tract, as the majority of epithelia in the urine, though not all, are characteristic enough to admit of their location. Besides this, all deeper-seated lesions will give connective-tissue shreds in the urine, the appearance of which is entirely different from that of mucus-threads; their presence admits the diagnosis of some destructive process. In this manner a diagnosis of a suppurative nephritis or pyelitis can be made and when the urines from both kidneys are examined separately, it will at once become apparent whether the condition has affected only one or both kidneys. Again, the appearance of the pus-corpuscles will in many cases tell us the constitution of the patient, as coarsely granular, compact corpuscles are found in persons with a good constitution, while pale, finely granular corpuscles are seen in those with a poor, broken-down constitution. The gradations between the two extremes are many, and persons with an originally good or excellent constitution, which has become impaired by disease, show varying numbers of coarsely and finely granular corpuscles, the one or the other predominating in accordance with the degree of impairment.

Microscopical examinations of urine, when carefully carried out, are undoubtedly more reliable than other methods for determining the functional condition of one or both kidneys. Numerous cases might be cited to prove this assertion, but time will permit of only one and the following case is selected:

The two catheterized urines from a girl of nineteen years were received for examination, the ureteral catheters having been in place for about twelve hours, and a sufficient amount collected for both a chemical and a microscopical examination. The specific gravity of the urine from the right kidney was 1,002, while that from the left was 1,020; the former contained 1 gr. of urea to the ounce and about $\frac{1}{10}\%$ of albumin, the latter 11 gr. of urea to the ounce and only a trace of albumin. Microscopical examination of the right specimen revealed the following features: Red blood-corpuscles, few to moderate; pus-corpuscles, containing fat globules, abundant; epithelia from the convoluted tubules of the kidney with fat globules, fairly numerous; epithelia from the straight collecting tubules of the kidney, few to moderate; epithelia from the pelvis of the kidney, also the deepest layer, moderate; epithelia from the ureter, moderate; connective-tissue shreds, moderate; tubercle bacilli, in small numbers. No true casts of any kind were present in this specimen. The urine from the left kidney contained these features: Red blood-corpuscles, few to moderate; pus-corpuscles, few; epithelia from the convoluted tubules of the kidney, few; epithelia from the pelvis of the kidney and the ureter, few. Nothing else, neither true casts nor tubercle bacilli being found. The pus-corpuscles in both specimens were all, without exception, pale and finely granular, some apparently commencing to disintegrate. The diagnosis was stated as chronic suppurative nephritis with pyelitis of tubercular character on the right side; mild interstitial nephritis on the left side. The surgeon was cautioned against operation, the constitution of the patient as revealed by the appearance of the pus-corpuscles, being given as poor. As the patient became

worse clinically and suffered intense pain in the region of the right kidney, an operation was nevertheless decided upon and the patient died about one hour after the operation. Upon autopsy, the right kidney was found to contain a number of variously sized abscess cavities, which had also invaded the pelvis of the kidney, while the left kidney showed the evidences of a mild interstitial inflammation.

When cases similar to the one related are constantly seen, any doubt as to the aid which the clinician can obtain by means of microscopical urinalysis must be dispelled.

SOME OF THE ADVANTAGES AND FALLACIES OF URINARY EXAMINATIONS.

BY EUGENE COLEMAN SAVIDGE, M.D., NEW YORK.

We all recognize the importance of clinical pathology and all resort to its aid to a greater or less extent. But I think a frank interconfidence would show that we have done so less than we should. The reason is obvious. Our hospital facility, when as junior we did this work, left us when we came to the desultory specimen in our office. And our work sent to pathologists became a fixed charge against us without appreciable return. Patients felt that we should know all this ourselves; they resented our rehiring for it. Therefore, many of us economized our light from pathology.

Now, it is not expedient that a man who designs to do first-class work should burden his attention with laboratory routine. Like the problem of literary presentation, any collateral subtracting from our sum total of attention leaves just so much less attention for the matter submitted. What we expend in laboratory routine is so much deducted from our general efficiency. Not being able to do it ourselves and not wishing to incur new fixed charges, therefore, we are apt not to do it, unless under some co-operative special plan under which we can apply as often as desired. In urging the importance of frequent resort to the laboratory, my time limit restricts me to the single plase of renal work, which will serve as an example.

Greater freedom of laboratory resort has given me: (1) Renewed faith in certain forms of therapeutics; (2) an almost iconoclastic conviction that we have been making errors after certain laboratory findings, and (3), of greater importance, an insight into conditions which have proven themselves to be observable long before there are laboratory findings. In other words, the laboratory is both confirmatory and non-confirmatory. It clarifies as much by what it does not tell as by what it tells.

These conclusions are to be explained this way: *First*, in almost all patients over forty who put the tension of concentration on their vaso-motor system, faint traces of albumin can be found if the urine is examined often enough. This is especially noticeable with those who have over-developed venous calibers, whereby the extra capacity of the veins keeps an undue share of the whole volume of blood in the veins as sewerage blood.

Second, certain forms of therapeutics can vary the specific gravity, the output of urea; can compass the solution of crystals which, like pepper in the eye, must irritate the delicate kidney substance and point to sure future trouble; can, in these relaxed venous cases, even remove albumin by enhancing the tonicity of the veins.

Third, having thus, by repeated laboratory use, seen the relation between arterial tension and the output of urea; between venous tonicity and albumin; between specific gravity and the appearance and disappearance of hemoglobin; the following conviction has grown: Varying these conditions will vary the laboratory findings. Also, the conditions may exist and be perfectly observable some time before the laboratory will give any finding.

There is, in my clear conviction, a renal physiognomy, which can thus be early recognized even while the laboratory reports normal urine. This is as unmistakable to those who are trained to look for it, as sometimes is a family resemblance, which is there indubitably yet baffles detailed description. In these subtle cases the perceptions of the mind outrun its power of expression.

I fully concede the danger in claiming a condition unprovable from a medico-legal point of view, as opening wide a door of possible fraud. Yet the opportunity it gives us to postpone indefinitely abnormal laboratory findings makes it an imperative duty to signal it.

The iconoclastic conviction referred to, is this: So many patients have albumin, so many interrelations exist between renal output and vaso-motor conditions, that it is a glaring error to pronounce our sentence always when we find it.

How apt are we to give the solemn warning to such a patient; to make out a devitalizing diet list for him, and start him gloomily along a dispirited road, to the end of which I firmly believe he is helped by some of the atrophies his very régime brings to him.

Frequent laboratory access, therefore, will teach, through the inter-relations there learned, how much we can do before the laboratory itself is able to speak.

Medical Progress.

PROGRESS IN THERAPEUTICS.

BY FREDERICK T. LORD, M.D., BOSTON.

THE TREATMENT OF PULMONARY TUBERCULOSIS.

1. *Selection of Cases for Sanitarium Treatment.*

(*a*) *Diagnosis by means of tuberculin.* — The diagnosis of pulmonary tuberculosis is confirmed by the finding of tubercle bacilli in the sputum in only about one half the cases admitted to sanitaria for the cure of the disease. In some institutions the diagnosis is thought to be established after a positive tuberculin injection.

Fraenkel [1] regards a positive reaction after the injection of tuberculin as evidence of the pulmonary form of the disease only when the rise of temperature is accompanied by a local reaction, such as the appearance of râles, not previously present, in the suspected lung. Unfortunately this test failed in the majority of his cases. Of 167 patients, positive to tuberculin, in which this sign was sought, it was found in only 18 (10.8%).

(*b*) *Cases suitable for admission.* — Fraenkel regards patients with incipient pulmonary tuberculosis (corresponding to the first stage of Turban's classification) as suitable for admission. The presence of localized râles at the apices and the finding of tubercle bacilli in the sputum are especially important. Patients with tubercle bacilli should have the preference, because of the greater certainty of diagnosis and because they are a danger to their neighborhood. Those in whom the disease is suspected in an early form because of malnutrition, increase of temperature, previous hemoptysis, etc., but without the definite findings of the previous class, should be admitted, but as second choice.

(*c*) *Cases unsuitable for admission.* — Fraenkel further advises that patients suspected of pulmonary tuberculosis, because of general symptoms (anemia, dyspepsia, etc.), and without fever, history of hemoptysis or pleuritis, who show only suggestive modifications of the respiratory murmur, but no râles, should not be admitted to sanitaria, even though they react to tuberculin.[2] Such patients can be as well cared for in a simple convalescent home (Heimstätte) or country colony. They will recover here. They can be more economically cared for. They are not a danger to their fellows. By their exclusion from the sanitaria, the places they occupy can be taken by those in whom the diagnosis is sufficiently certain and the statistics of such institutions will thus show more accurately what can be accomplished.

2. *Treatment with Tuberculin.*

Various opinions have been held concerning the therapeutic value of tuberculin, since Koch's statement in 1890 [3] that evident improvement or even almost a cure might be obtained by its use in the initial stage of pulmonary tuberculosis. In 1891, Virchow [4] called attention in a striking series of observations to the appearance at autopsy of fresh extension of the tubercular process in cases treated with tuberculin. Probably influenced by Virchow's pathological evidence, Guttmann and Ehrlich,[5] who had seen fever persist longer than desired after the injection of 1 mgm., advised still smaller initial doses, of $\frac{1}{10}$ mgm., increasing the dose by $\frac{1}{10}$ mgm. daily, thus reaching 1 mgm. only after ten days. With an occasional intermission, the dose was increased by $\frac{5}{10}$ mgm. and when 2 to 3 mgm. had been thus reached, still further increased by the addition of $\frac{1}{2}$ mgm. to each dose. In 1899, Petruschky [6] recommended very small initial doses, if possible less than $\frac{1}{10}$ mgm., increasing until an evident but not too intense reaction is produced. After the injections have been thus given in increasing doses until no reaction follows, they are omitted for three or four months, then given again in a similar manner (Etappen-method). Definite healing is claimed in suitable cases, after two to three repetitions of the injections, as is shown by the failure to react six to twelve months after the cure. In 1902, Weicker and Petruschky [7] advised this method in combination with sanitarium treatment, where patients can undergo the latter for only a limited period.

Unfortunately, the claims for or against tuberculin treatment are usually unsupported by careful comparisons between patients thus treated and those who have had the benefit of sanitarium treatment alone. It is, therefore, of interest to learn the

(*a*) *Effect of tuberculin injections on animals, in the experiments of Trudeau, Baldwin and Kinghorn.*[8] — The authors point out, however, that their results can be only cautiously applied to the effects of tuberculin on human beings.

Forty guinea pigs were inoculated in the thigh with one loop of a thick emulsion of tubercle bacilli. Twenty, with an average weight of 510 gm. were given 2 mgm. of tuberculin on the twentieth, 10 mgm. on the twenty-fifth and 15 mgm. on the thirtieth day. Twenty animals with an average weight of 515 gm. were reserved as controls. The duration of life in the twenty animals treated with tuberculin averaged ninety-six days, while in the twenty controls the average duration of life was one hundred and three days. "No conclusion was possible as to the effect of tuberculin from the character of the lesions."

The cornea was infected with tubercle bacilli in twenty-one rabbits, eleven of whom were reserved as controls and ten used for tuberculin injection. No spread of the tubercular lesions could be observed after the tuberculin injections. On the contrary, a favorable absorptive influence was noted on the diseased focus.

[1] A. Fraenkel: Specielle Pathologie und Therapie der Lungenkrankheiten, 1904, p. 842.

[2] Statistics are meagre concerning the proportion of cases with pulmonary lesions among those reacting to tuberculin. Some idea of the probable proportion may be gained by an analysis of cases, showing tuberculosis in different parts of the body at autopsy. Of 1,200 autopsies at the Massachusetts General Hospital, tuberculosis was found in some part of the body in 251 cases (20.9%), limiting the pathological diagnosis to cases showing caseous, fibro-caseous or calcified pulmonary or glandular lesions, on gross or microscopical examination; or with similar foci elsewhere in the body, if doubtful, confirmed by the microscopic evidence of tubercles or tubercle bacilli. Among these 251 cases with tuberculosis in some part of the body, in 60 (24%) careful examination of the lungs failed to show any tubercular lesions, although a careful inspection was made in each case.

To judge from these figures, an approximate estimate of cases with pulmonary lesions among those reacting positively to tuberculin would be three out of four among unselected cases.

[3] Koch: Deut. med. Woch., 1890, Nr. 46a, pp. 1029–32. Koch stated that the initial dose should be small: 1 mgm. Subsequent daily doses should be increasingly larger, until 1 cgm. or more was given at each injection. If a rise of temperature followed the injection, the same dose was again injected until no reaction was obtained.

[4] Virchow: Berl. klin. Woch., No. 2, 3, 4, 5, 6, 7 and 9. 1891.

[5] Guttmann and Ehrlich: Deut. med. Woch., 1891, No. 10, p. 373.

[6] Petruschky: Ref. a. d. 71 Vers. dtsch. Naturf. u. Arzte, erschienen als Sonderabdruck a. d. Gesundheit Leipzig, 1899 (quoted from Fraenkel).

[7] Weicker and Petruschky: Berl. klin. Woch., 1902, Nr. 4 and 5, p. 74 and p. 98.

[8] Trudeau, Baldwin and Kinghorn: Journ. of Med. Res., Aug., 1904.

(*b*) *Therapeutic value of tuberculin in human pulmonary tuberculosis.* — This valuable study by Brown [9] is quite exceptional in its freedom from the record of mere impressions concerning the standing of tuberculin in treatment. His series embraces 159 cases treated with various kinds of tuberculin, between 1890 and 1902. The result in the 159 cases treated with tuberculin is compared with the result in 1,315 cases admitted to the sanitarium during the same interval, a comparison being made in each group with cases at the same stage of the disease as far as possible.

Brown points out that selection of the cases may have influenced the apparent result, when the two groups are compared.

Among the far advanced cases, slight if any difference was noted in the result of treatment with or without tuberculin. No conclusions could be drawn concerning the influence of a second course of treatment carried out on 29 cases. No evidence was afforded that the tuberculin had an injurious effect on the kidney.

The use of tuberculin seemed to influence rather favorably the disappearance of tubercle bacilli from the sputum. Of 99 patients with tubercle bacilli on admission and untreated with tuberculin, 75.3% still had them on discharge. Of 147 cases with tubercle bacilli on admission and treated with tuberculin, only 53% showed them on discharge.

The treatment with tuberculin seemed to exert some influence on the post-discharge mortality. During the first three years, it was found that more of the apparently cured cases, in whom tuberculin had been used, were alive than the life table indicated for persons in health. In each successive year, however, this surprising result was not maintained, but still the number of tuberculin treated cases who remained well was greater than among the total number of cases.

3. *The Treatment of Consumption in the Homes of the Poor.*

Though supervision in institutions is the treatment of choice among the poor, it is obvious that available opportunities fall far short of the demand. In the arrest of the disease at an early stage under sanitarium treatment, a great danger of its spread is removed by the elimination of a focus of infection. Moreover, an important educational influence is diffused through the community by the discharge of patients instructed in the safe disposal of infected material and better hygienic methods of living.

In the more brilliant results accomplished by the cure of those having incipient pulmonary tuberculosis, the care of more advanced cases has been much neglected. The latter are of far more danger to the community and comprise a large proportion of those ineligible to institutions. In some dispensary clinics much is already being done in an effort to reach these unfortunate patients in their homes through regular visits of an intelligent person, whose duty it is to see that the physicians' orders are carried out and unsanitary conditions corrected as far as possible.

Miller [10] has outlined such a system which has been in operation at the Vanderbilt Clinic. In cases in which it is impossible to obtain proper sanitarium or hospital treatment, sanitarium methods are adopted as nearly as possible to the conditions at home. The danger of infecting others is carefully explained, suitable pocket cuspidors are supplied and printed circulars distributed. A modified rest cure is instituted as far as possible. If the disease is in its active stage, at least two weeks of absolute rest, in bed if there is fever, is often followed by remarkable improvement. When the resumption of work becomes necessary, the patients are instructed to rest at odd moments whenever possible, and to rest absolutely after working hours. If necessary, a change of occupation is advised and, if possible, assistance given toward securing positions entailing little physical exertion and an out-door life.

The patient is instructed how to obtain a maximum of fresh air in the home, sleeping on the roof or fire escapes during the summer. An effort is made to secure an abundance of proper food, and indigent patients are reported to the committee of the Charity Organization Society for the Prevention of Tuberculosis.

A regular nurse is indispensable in this inspection and regulation of the home.

Of 35 patients, over whom this dispensary oversight was carried out, 8 were early cases, 6 moderately advanced and 21 advanced. Twenty-two increased in weight, the average gain being four pounds. Ten patients lost weight and three showed no change. Expressed in percentages, improvement was noted in 63% of the total number, in 37% of the early cases, in 83% of the moderately advanced and in 47% of the advanced cases.

Osler [11] outlines a somewhat similar plan which has been carried out with 726 cases in the Out-Patient Clinic of the Johns Hopkins Hospital,

More recently J. H. Pratt [12] has described a plan of more detailed supervision over a small tuberculosis class. He regards the following as essential features in the regulation of home treatment: (1) Facilities for living an out-door life in all kinds of weather. (2) Good food. (3) Careful regulation of the details of the daily life, the necessary supervision to be maintained by (*a*) frequent visits of the nurse and occasional visits of the physician; (*b*) weekly meetings of the class in the examining room; (*c*) the individual record book in which each patient enters the esential details of the day, *i. e.*, the number of hours at rest, the amount of exercise, the diet and, if necessary, the temperature.

[9] Brown: Ztsch. f. Tubercul. und Heil. Leipsig, 1904, ii, 235, 315.

[10] Miller: A Handbook of the Prevention of Tuberculosis. Published by the Charity Organization Society of New York City, 1903.

[11] Osler: First Annual Report of the Henry Phipps Institute for the Study, Treatment and Prevention of Tuberculosis. Phila., 1905, 14–54.

[12] Pratt: Outdoor Life. Trudeau, N. Y., 1905, Sept., p. 194.

Reports of Societies.

AMERICAN CLIMATOLOGICAL ASSOCIATION.

REPORT OF THE TWENTY-SECOND ANNUAL MEETING OF THE AMERICAN CLIMATOLOGICAL ASSOCIATION HELD AT DETROIT, MICH., JUNE 29, 30, 1905.

(Concluded from No. 24, p. 676.)

DR. JOHN WINTERS BRANNAN, of New York, presented a paper on

THE SEA AIR TREATMENT OF TUBERCULOSIS OF THE BONES AND GLANDS IN CHILDREN.

After reviewing the excellent results obtained at the seaside sanatoria in France, especially at the hospital at Berck-sur-Mer, on the north coast of France, an institution of 600 beds, and at St. Pol-sur-Mer, the author gave an account of the work of the

NEW YORK ASSOCIATION FOR IMPROVING THE CONDITION OF THE POOR

at Coney Island, near New York City. The patients are children from the tenements and from the special hospitals, such as the Hospital for the Ruptured and Crippled, the Orthopedic Hospital, the Laura Franklin Hospital and others.

Cases of hip disease, Pott's disease and tuberculosis of the bones and glands were admitted to an experimental tent camp. They were given open-air treatment successfully throughout the year. All the patients were bathed in salt water every day. As the weather grew colder they were given more substantial quarters, but by means of sheltered porches even the totally disabled were kept in the open air and improved wonderfully in circulation and general nutrition. At night as well as throughout the day the windows of the wards are wide open, the temperature not varying materially from that of the outside air. The windows are closed for warmth one half hour in the morning and evening while the children are washed and dressed. They are warmly clothed. They have great appetites, good spirits, remarkably good circulation and vastly improved color. All the patients, including those of kindergarten age, receive instruction two hours a day. The lessons are given in a large well ventilated room and after they are over the children are returned to the outer air. Marked progress toward recovery was eventually noted, in some amounting to an apparent cure during the year's experience. When operations were required rapid progress has been a striking feature. Statistics were given and five cases cited. They included a tuberculous ankle joint, knee joint, hip joint and Pott's disease of the spine.

DR. E. FLETCHER INGALS, of Chicago, read a paper on the

RESPIRATORY MOVEMENTS OF THE BRONCHIAL TUBES.

About a year ago, while doing bronchoscopy on a child two years of age, for the removal of a foreign body from one of the branches of the main bronchus, his attention was arrested by the rhythmical dilatation and contraction of the main bronchi during inspiration and expiration. This movement was so great that in inspiration the diameter of the tube was sometimes more than twice as great as in expiration. Similar facts were observed in the trachea of another young child and in a boy of thirteen. An experiment on dogs corroborated these observations. The contraction of the muscles in the first branches were, in some instances, so great as to cause complete collapse of the tube. Dr. Ingals suggested an inquiry as to what influence this action of the bronchial tubes has on the production of the physical signs heard over the lungs. Dr. Ingals said he had examined a patient subject to asthma all her life, having had one, two or three attacks every day or night for years, and found in the interval between paroxysms that the vesicular murmur was not more than from ⅛ to ¼ as loud as normal in either lung, although there were no râles and no signs of vesicular emphysema or other disease of the lungs. He suggested that possibly this feebleness was due to deficient innervation of the bronchial muscles, and the attacks of asthma might be due to irritability resulting in excessive paroxysmal action of the contractile muscles analogous to the action of the myocardium in palpitation. Dr. Ingals thinks that this action of the bronchial tubes has more to do with the production of râles than have secretions.

The difficulties experienced in discovering small objects in the bronchi through the bronchoscope are due largely to the action of the bronchial constrictor muscles, which may possibly completely close the tube in which the foreign body is ensconced. The drugs which cause constriction are muscarine, pilocarpine and physostigmine, the effects being abolished by atropine. Barium salts, veratrine salts of bromine and of the heavy metals produce constriction which is not influenced by atropine. Chloroform, ether, urethane, lobelia and atropine induce dilatation of the bronchioles when constriction is present. The dilatation produced by lobelia is quite transient while that by atropine is permanent.

DR. NORMAN BRIDGE said that the practical value of the paper is that it emphasizes the clinical value to the coughing patient of voluntarily coughing at the end of an expiration, and so saving his strength and conserving his power. A tuberculous patient who coughs a great deal thereby undergoes an amount of physical exercise capable of keeping up his elevated temperature. If the amount of physical exercise can be reduced he not only will have a larger measure of comfort, but his strength will be conserved, his temperature will be kept down and his chances of recovery materially enhanced. We should emphasize this truth to every tuberculous patient who coughs. The stimulation of the vagus increased the contraction of the bronchioles, but we were not certain that it increased the dilatation. Sometimes we thought that it did. While the contraction and dilatation of the bronchi are ordinarily very distinct in respiration and in some experiments the contraction has been extreme under the stimulation of the vagus, yet in the last experiments the results were not entirely satisfactory.

DR. HENRY SEWALL, of Denver, reported an

EXTRAORDINARY CASE OF ANTHRACOSIS SIMULATING AORTIC ANEURISM.

The patient had a mild degree of pulmonary tuberculosis. He was a machinist, aged forty-six, and had worked for over a year in the authracite coal region of Pennsylvania when twenty years old. The patient had a moderate consolidation of the right apex and also very slightly on the left. He had lost flesh, was able to breathe only with difficulty and could sleep only on his left side. He had a systolic arterial bruit. He was put to bed for six months. He coughed up bright blood and complained of intense pain over his heart which was aggravated by inspiration. He died after remaining several hours in a semi-conscious state. Although this case was carefully studied it was not until the autopsy that the presence of a hard, solid, ovoidal mass was found in the root of the right lung,

4 x 3¼ x 2½ in. It was black and gristly. Chemical examination showed it to be coal dust, the ash containing 40% of silica and 35% aluminum oxide.

DISCUSSION.

Dr. DeLancey Rochester, Buffalo: This case shows us the very great importance of careful clinical study before coming to a positive diagnosis. In regard to the diagnosis of intrathoracic aneurism we should never make our diagnosis upon physical signs alone unless the aneurism is so far forward that it is unquestionable. But we should bear in mind particularly the history of the case, both as to predisposing causes, and as to some exciting cause in producing the aneurism, and make a very careful study of the arteries of the body generally before we conclude that we have an intrathoracic aneurism present.

Dr. Sewall: I have nothing to say except that from looking at the question from the patient's standpoint, it seems to me if there is a fair doubt of the existence of aneurism we ought to test that doubt, and give the patient the benefit of a therapeutic procedure. The disaster which followed an ordinary mode of life left in such a condition amply justifies such a procedure until the therapeutic test is thoroughly made. The history of the treatment of this case shows one clearly that when one's mind is pretty well made up that it is difficult to change it. It ought to have been changed, and there was the error.

Dr. Roland G. Curtin, of Philadelphia, read a paper on

HEMOPTYSIS IN CARDIAC DISEASE.

It was Dr. Curtin's twenty-first annual paper without interruption before this Association.

DISCUSSION.

Dr. DeLancey Rochester: We occasionally find cases of hemoptysis associated with valvular disease of the heart which are really tubercular in origin. I have had two cases of mitral stenosis, apparently of rheumatic origin, both occuring in women, in which hemoptysis occurred. A careful study of these cases showed that the hemoptysis was tubercular in origin. We had the bacilli appearing in the sputum, and every evidence of tubercular disease developed. Broadbent has reported several cases, and I think Gibson also. There is one thing we ought to bear in mind in all our cases of hemoptysis associated with valvular disease of the heart, that occasionally they may be of a tubercular nature. Dr. Rochester referred to a case of mitral stenosis and one of mitral insufficiency in which hemoptysis was the initial symptom of pneumonia developing afterwards with high temperature and other conditions of an ordinary pneumonia and the pneumococci were decidedly evident in the sputum in pure culture.

Dr. R. H. Babcock, of Chicago: I have always regarded hemoptysis in cardiac disease as an expression of stasis and stasis probably in the bronchial venules or capillaries. There is a communication between the pulmonary capillaries and the venules of the bronchial system accompanying the bronchioles of less than 1-25 of an inch in diameter. And in cases of cardiac disease with obstruction to the free passage of blood from the pulmonary veins there would naturally be a stasis in the venules of the bronchial system which form the anastomosis with the pulmonary capillaries in the walls of the finer bronchioles. I believe Dr. Curtin's distinction is theoretically correct, that we may have in cardiac disease a pneumorrhagia by which he means an escape of blood through the pulmonary capillaries, and a bronchorrhagia by which he means an escape of blood through the bronchial veins and capillaries. But I believe practically we cannot tell which comes first, on account of the communication between the two systems of vessels. In pulmonary tuberculosis we recognize that blood may come from the pulmonary arteries in consequence of its erosion of it or rupture in the later stages of the disease especially. But we have hemoptysis in the early stages of pulmonary tuberculosis, perhaps as the initial symptom. And then it is very difficult to determine, and perhaps impossible to determine, the exact cause of the hemorrhage, whether it is due to embolism and rupture of a small pulmonary vessel, or to diapedesis. In cardiac disease we must distinguish, therefore, the cases in which the hemorrhage is arterial, *i. e.*, the blood coming from the pulmonary arteries, and the cases in which the blood comes from the veins and capillaries. Barring out cases of hemorrahge due to embolism and recognizing the influence of stasis in the pulmonary capillaries, and in the bronchioles and venules, then we may have hemoptysis in almost any form of cardiac disease. This theory is borne out by the fact that we have hemoptysis most frequently in cases of mitral disease. Dr. Rochester's remarks are very pertinent, for we know that valvular disease, mitral stenosis, for instance, is not at all antagonistic to the development of tuberculosis. But those cases are exceptional, and we must recognize that ordinarily cardiac hemoptysis is due to stasis, more frequently, I believe, in the bronchial mucosa than in the pulmonary capillaries in the walls of the alveolæ.

Dr. S. D. Risley: In the study of hemoptysis, associated with cardiac disease, we should not lose sight of the possible relation which may exist between both the affection of the heart and the hemoptysis with diseases of the general vascular system. In the early stages of the general vascular disease, associated with lithemia, for example, there is a liability to leakage everywhere. It is then we see hemorrhages in the cerebral arteries and in the retina.

In the early stages of blood vessel disease, associated with albuminuria, we may have hemorrhage in the middle ear. It may be that pulmonary hemorrhages, at times at least, have only this relation to cardiac disease.

Dr. J. H. Elliot, of Muskoka, referred to the similarity of symptoms occasionally arising in mitral stenosis and in pulmonary tuberculosis. He had observed three cases of mitral stenosis which had been diagnosticated as cases of pulmonary tuberculosis; only one of them has proved to be tubercular, the other two, with recurring hemorrhage, or blood stained morning sputum with localized râles in the chest, particularly on the left side have turned out to be simply cases of mitral stenosis. The first case was referred to him as one of pulmonary tuberculosis, and after six months' observation in the sanitarium was discharged as not having pulmonary tuberculosis. A year later she was examined by another physician, who used the x-ray upon the chest and she was told for the second time that she had tuberculosis. After a six-months further observation it was evident that the hemoptysis was from mitral disease. She had a well-marked mitral murmur. Subsequently, she was married, and about a year and a half afterwards had a confinement, and died very suddenly immediately after being delivered. The second case had bacilli well-marked, both conditions being present. The third case was marked by a large initial hemoptysis, but no subsequent hemorrhage. She had no physical signs of disease in the chest, and for the determination of the presence of tuberculosis, tuberculin was used with no reaction.

Dr. Curtin stated that in two of his cases of mitral stenosis associated with pulmonary disease the sputum was examined before death and the lungs after death and in neither case was there any evidence of bacilli in the lungs or sputum.

DR. CHARLES DENISON, of Denver, read a paper on

IMMOBILIZATION OF ONE HALF THE THORAX.

This consisted in a scheme for applying traction plasters for the arrest of pulmonary hemorrhage, to relieve pleurisies, to contract lung excavations and to adjust rib fractures. The immobilization is approximate only, even by the improved method. Directions were given for cutting these plasters. They can be made from a 7-in. wide roll of zinc oxide adhesive plaster, J. & J., or zinc oxide moleskin. Dr. Denison believes that exercise, full breathing and desired supplementary use of the good lung can be encouraged sooner while the plasters are worn than without their support. In the pain of pleurisy accompanying lung affections much relief is afforded. Cases were cited showing the effective results in pleurisy and in lung excavation.

DR. DELANCEY ROCHESTER, of Buffalo: Mr. President, this paper is interesting, and there is one thing I want to say in connection with it. Unquestionably the apparatus of the doctor will immobilize the chest, but I simply want to take up the matter of treatment of hemorrhage of the lung by this means, and it strikes me it is inapplicable to a large majority of cases. For as far as my own personal experience is concerned I don't think it is very often easy to say where the hemorrhage comes from. Moreover, I think it is very ill advised to examine to any great extent a patient having a hemorrhage, to determine where it comes from. Any extensive examination I think is exceedingly serious in its results at times. I certainly have seen serious results follow an extended examination. That alone precludes us from knowing in a great many cases where the hemorrhage comes from. That being so we could not apply this apparatus, not knowing where the bleeding does come from. And, moreover, certain cases of autopsy after hemorrhage that I have seen have shown that while the most extensive disease was upon one side the hemorrhage, which was most active at the time, really came from the opposite side. So that the physical signs upon an examination of the chest, while they would show results to a greater degree upon one side the hemorrhage would be really coming from the other. It strikes me, to use such an apparatus might do more harm than good. It certainly would under certain circumstances. Whereas we have in morphine, properly given, a drug which, in my opinion, will control every hemorrhage from the lung. I have never seen it fail when it is given properly. It is not given for the purpose of quieting nervousness or anything of that sort, it is given for the purpose of reducing the respirations to a minimum. I reduce the respirations to 8 and do not let them get above 12 under any circumstances, until there has been no hemorrhage for forty-eight hours. Then, to let the respirations gradually come back to their natural condition. I have never seen any bad results from it. I never give atropine with the morphine after the first dose. When we have such a means at our hands to stop hemorrhage I do not see the use of such a procedure as the doctor recommends. I think the doctor's device in many cases might be really serious in its results.

DR. BRIDGE: What these gentlemen say with reference to the difficulty of locating the seat of the pulmonary hemorrhage is undoubtedly true, but suppose we do know it comes from the left side, for example, and not from the right side, is there any objection to immobilizing the chest on that side? It seems to me not. It would be a sad mistake to immobilize the well side. If we knew that the blood comes from a particular side, there can be no objection to immobilizing that side of the chest. And it is a good measure. That it is a thing of enormous value in pulmonary tuberculosis I have not the slightest doubt. The theory that a tuberculous lung should be exercised is wrong. There is no more reason for exercising a tuberculous lung than there is for exercising a tuberculous joint, or manipulating a tuberculous tissue of any sort. There is every reason, logically, clinically and experimentally, for keeping a tuberculous lung still, if it is possible. And this measure offers a means of doing it partially in a considerable portion of unilateral cases. I cannot, however, agree with our friend from Colorado as to the ease with which a cavity is outlined, or the ease with which he seems to outline the cavity and the brilliant way in which he sees these cavities narrow. I do not think he or any other human being can outline a cavity so small and so circumscribed as he shows in the second case, and determine that it has contracted in that manner. We are constantly making mistakes about cavities. I would not give two cents for all the skiagraphs on earth as showing the condition of a cavity when compared with ordinary physical examination. The auscultatory percussion is of some value, it is true, but a cavity is so likely to be now empty and now full of material that we are constantly making blunders.

DR. DENISON: As to the risk of doing damage by making an examination in a case of hemorrhage in quite a long experience I have never had any harm come from the stethoscopic method of determining the locality from which the hemorrhage comes. I have not used this method when I was uncertain where the hemorrhage comes from. The history of the case, the previous knowledge of where the disease was located and where you would expect hemorrhage are a guide. Practically, the thing works a great deal better than theoretically. I have used it in 75% of all the cases of hemorrhage I have come across. The patient sometimes can tell you himself right where he feels the stoppage or the pain, or felt that something had given way. I once applied these straps in pleurisy on my own affected side, and had immediate relief. I could not take a long breath without intense pain, and it was very easy afterwards. In treating hemorrhage by lessening the number of respirations by the use of morphine, that very argument could be used in favor of this method of immobilization of the affected side of the chest. You can decrease the use of the affected lung 90% and then, of course, nearly proportionately increase the movement of the other side. That decreasing of the use of the diseased side is equivalent to lessening the rate of respiration. It is a great deal easier as you do not have to get over the effect of the morphine and I have given very few hypodermics for the last ten years in cases of hemorrhage. I do not use ergot at all.

Before adjourning the Association elected the following officers: President, Dr. E. L. Shurly, of Detroit; Vice-Presidents, Dr. A. D. Blackader, of Montreal, and Dr. Henry Sewall, of Denver; Secretary and Treasurer, Dr. Guy Hinsdale, of Hot Springs, Va.; Councillor, Dr. W. F. R. Phillips, of Washington, D. C.; Representative on the Executive Committee of the Congress of American Physicians and Surgeons, Dr. F. I. Knight, of Boston, Dr. R. G. Curtin, Philadelphia, alternate.

It was decided to hold the twenty-third annual meeting at Atlantic City, May 12–14, 1906.

Recent Literature.

The Principles of Bacteriology: A Practical Manual for Students and Physicians. By A. C. Abbott, M.D., Professor of Hygiene and Bacteriology and Director of the Laboratory of Hygiene, University of Pennsylvania. Seventh edition, enlarged and thoroughly revised. With 100 illustrations, of which 24 are colored. Philadelphia and New York: Lea Brothers & Co. 1905.

This textbook needs no introduction. It was one of the first laboratory manuals to appear in this country and it remains one of the best. In this new edition the presentation of the different subjects of infection and immunity appears to us exceptionally fine.

The Drigalski-Conradi and Hoffmann-Ficker methods of isolating the typhoid bacillus are given as well as the original method of Hiss, but the newer culture medium of Hiss is not mentioned. We feel that the paratyphoid bacillus, the bovine tubercle bacillus and micrococcus catarrhalis should have been described.

Pathology and Morbid Anatomy. By T. Henry Green, M.D., F.R.C.P., Consulting Physician and Emeritus Lecturer on Clinical Medicine at Charing Cross Hospital, London, and Consulting Physician to the Brompton Hospital for Consumption and Diseases of the Chest. Tenth American revised from the tenth English edition. Revised and enlarged by W. Cecil Bosanquet, M.A., M.D. Oxon., F.R.C.P. Lond., Assistant Physician (late Pathologist) to Charing Cross Hospital, London, and to the Brompton Hospital for Consumption and Diseases of the Chest; formerly Fellow of New College, Oxford. With a colored plate and 348 illustrations in the text. Philadelphia and New York: Lea Brothers & Co. 1905.

Green's Pathology has always been a favorite with elementary students. In its various editions it has presented the essentials of pathology clearly and interestingly. The present editor has added a chapter on auto-intoxications and nutritional diseases. The sections on bacteria and immunity have been carefully revised and give evidence of the author's first-hand knowledge of the recent literature. The chapter on the pathology of the nervous system is one of the best in the volume. The greater part of the work possesses the defect so common in revised editions of older treatises dealing with a rapidly developing science, that the work of revision has not kept pace with the advance of pathological knowledge. This edition does not substantiate the publisher's claim that its pages may always be consulted for the present position of pathology.

The following statement is made on page 501: "It is now universally recognized that the fat seen in the muscular fibers in fatty degeneration is the result of a change in the fibers themselves and is not derived from without."

As a matter of fact, the work and writings of Rosenfeld, Kraus and Sommer, Herxheimer, and Leick and Winckler, all published within the past five years, maintain that in fatty degeneration the fat is not formed from the cell-proteids but is derived from without. Rosenfeld, and Leick and Winckler have demonstrated that the so-called fatty degeneration of the heart is really an example of fatty infiltration.

There is no mention of Mallory's classical researches on the pathological histology of typhoid fever. The bovine and human tubercle bacilli are regarded by the editor as probably identical, although Theobald Smith in 1898 pointed out the cultural and morphological differences between the two species.

The statement that the clinical and experimental data do not warrant a definite opinion as to whether amebæ have any pathological significance or not is surprising, in light of numerous investigations including those of Kartulis, Councilman, Lafleur, Quincke and Roos and Musgrave.

Hare's Therapeutics. A Textbook of Practical Therapeutics, with Especial Reference to the Application of Remedial Measures to Disease and their Employment upon a Rational Basis. By Hobart Amory Hare, M.D., B.Sc., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia, Physician to the Jefferson Hospital, etc. New (eleventh) edition, enlarged and thoroughly revised to accord with the eighth decennial revision of the United States Pharmacopeia, 1905. In one octavo volume of 910 pages, with 113 engravings and 4 colored plates. Philadelphia and New York: Lea Brothers & Co., 1905.

This (eleventh) edition of Hare's Textbook is fully equal to previous editions, the last (tenth) having been favorably reviewed in this Journal, Dec. 8, 1905. Numerous alterations have been made in the text to conform to the new United States Pharmacopeia.

In arrangement and readiness of reference, the book is especially commended. Part IV, on Applied Therapeutics, will, as heretofore, be appreciated by students.

The Blues (Splanchnic Neurasthenia): Causes and Cure. By Albert Abrams, A.M., M.D. (Heidelberg), F.R.M.S. Second edition, enlarged. 12mo, pp. 254, with 30 illustrations. New York: E. B. Treat & Co. 1905.

This new edition differs from the old merely by the addition of certain notes in the appendix on massage of the liver, human metabolism, the chemical demonstration of the action of the sinusoidal current, testing intra-abdominal tension and percussion of the stomach. These additions serve merely to emphasize the theories advanced in the former edition, which was reviewed in these columns a year ago.[1]

[1] See this Journal, cl, 517, May 12, 1904.

THE BOSTON

Medical and Surgical Journal.

THURSDAY, DECEMBER 21, 1905.

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THE SECRET NOSTRUM EVIL.

IN a paper read before the Section on the Practice of Medicine of the American Medical Association in July last, and published in the *Journal of the American Medical Association* for Dec. 2, Dr. Frank Billings declares war against the secret nostrum evil. In a perfectly straightforward way Dr. Billings discusses the growth of this evil and brings again into prominence many matters which the medical profession have vaguely known of for years, but which have been allowed to go on without systematic protest. We have previously alluded editorially to the active crusade which *Collier's Weekly* is taking against the patent medicine evil, and there is in general every evidence to show that the matter will not be dropped until the abuses which are everywhere apparent are rectified or until some sort of a satisfactory compromise is made. It behooves us, therefore, to face the situation calmly and judicially. Its intricacies are manifold and it is essential that the medical profession, acting as an organized body in a matter of much public concern, should proceed with firmness, caution and dignity.

Dr. Billings makes the following statement in regard to the terms "nostrum," "patent medicine" and "proprietary medicine":

"The term 'proprietary medicine' does not necessarily stamp a preparation or remedy as a nostrum. Webster says that a nostrum is 'a medicine, the ingredients of which are kept secret for the purpose of restricting the profits of sale to the inventor or proprietor; a quack medicine.' Some proprietary medicines are patented, or, better, the process of manufacturing an article is patented. This patent protects the discoverer or owner in the manufacture of the medicine or drug for a period of seventeen years. These preparations are ethical, in that they are not secret, for any one for a small fee may obtain from the patent office of the government a copy of the description of the process of manufacture and the actual chemical composition of any such patented drug or remedy. The chief harm which has come to us in America from the protection by patent of the process of making a chemical or drug has been the resulting high price of the product. Many of the synthetic chemical drugs, like antipyrin, phenacetin, etc., cost ten times their worth as compared with the price of the same drugs in Germany and in other countries. As stated, however, such really patented preparations are not secret; the composition is known. Some of them are of value therapeutically. Many of them are valueless. Some of them are harmful. Most of them we could easily get on without and fare better with the older, more simple remedies. Too many 'made in Germany' specifics are shoved under our noses.

"Now, as to the other proprietary medicines. All the so-called 'patent medicines' put on the market for the public, and many of the preparations exploited to physicians and distributed by them to the public, are not patented, but are protected by a copyright or trademark. Technically there is no difference between the secret proprietary medicines manufactured for physicians' use and the 'patent medicines' exploited to the public. Both are protected by a copyright or trademark name. Both are protected for an indefinite time. They are mixtures, as a rule, of several ingredients."

The writer finds a number of causes for what he calls the nostrum evil. The first of these is that pharmacology and therapeutics are relatively neglected in our medical schools. Drug nihilism is too frequently taught, and the student emerges from his preliminary professional training ignorant of the fundamental principles of drug therapeutics and quite willing to accept the verdict of the drug vender. In the second place, while the reputable manufacturing pharmacists have vastly improved official preparations, and thereby rendered a distinct service to the medical profession and to the people at large, they have also put on the market their own mixtures and encouraged their use by advertising means among physicians. The efficiency and desirability of many of these special mixtures he regards as questionable. Finally, Dr. Billings draws attention to the fact that a certain portion of the medical press has been practically subsidized by manufacturing chemists for the exploitation of their wares. The remedy for all this, as of other evils, Dr. Billings thinks, is publicity.

The medical profession should know more than it does of the preparations which it is in the habit of dispensing. A tendency to secrecy and to extravagant claims of efficiency in these proprietary preparations must be discountenanced, and for this purpose the Council on Pharmacy of the American Medical Association has been organized. We have already given our approval of the general work which this Council has set itself to do. To carry it to a successful conclusion will require a high degree of tact, judgment and fair-mindedness.

The published discussion of Dr. Billings' paper shows a very considerable unanimity of opinion regarding the evil and the means of its abatement. The journal of the association itself came in for a certain degree of criticism, particularly from California physicians who claimed that the journal should completely purge its own pages before it could expect to exert its completest influence against the evil. A resolution was offered by Dr. Alfred Stengel of Philadelphia which contained the passage that the Board of Trustees be requested to effect the removal from the pages of the *Journal of the American Medical Association* of the advertisements of any nostrums. Here the matter at present stands. Its satisfactory solution demands our most earnest attention, but that it will be a simple matter to adjust, or that it will be easy to mete out justice to all, is not for a moment to be considered. This should lead us to enter upon the discussion with firmness tempered by conservatism, and with an entire absence of hysteria.

Certain facts are apparent; physicians themselves have, perhaps, unwittingly, but none the less surely, encouraged and made possible much of the success of proprietary medicine. Many preparations offered to the public are frauds. Many other preparations are frauds only in so far as their virtues are exaggerated. Still others are acknowledged to be useful. When we stop for a moment to consider the extraordinarily small place which drug treatment of any sort has come to take in the hands of many of our best physicians, we cannot be surprised at the present aspect of the situation. Students are not taught the therapeutics of drugs, simply because the therapeutic indications are extraordinarily limited. It is not so much that they graduate in ignorance of the use of drugs as that they are taught that the best practice subordinates drugs to other means of treatment. This is the opportunity of the secret nostrum. It appeals to an inborn prejudice in human nature which the ordinary physician, as well as the layman, possesses in a remarkable degree. The necessity of giving something in the way of a drug primarily stands in the way of the extermination of the nostrum evil. To overcome it, then, the physician must be educated to resist temptation far more than is at present the case. The first reform must come from within.

The manifest frauds the medical profession must absolutely discountenance. This, we believe, is generally done. The real difficulty arises when we come to consider the harmless and often useful preparations which are advertised under trade names. Whether it is wise or fair to sweep off the entire list of advertised remedies, if this were possible, or to adopt less drastic measures, must occupy the most careful attention of the men appointed to do this work. Many interests are at stake.

REPORT ON PLAGUE.

We have come to look with interest for the appearance of the report of the Sydney Board of Health on Plague. We have before us the report of a fourth outbreak with remarks on the etiology, based on observations made between the years 1900 and 1904. The report is written by Dr. J. Ashburton Thompson, the chief medical officer of the government. In general, the most recent investigations bear out the opinion expressed in previous reports that at Sydney man has acquired the infection of plague from rats infected with the disease. It is believed that plague in that city has been wholly dependent upon the rats, and its successful control has been through measures directed to the extermination of the rat rather than to conditions directly surrounding individuals. In one of the previous reports the hypothesis was made that the flea was probably instrumental in the conveyance of the disease. This still remains somewhat in doubt owing to the lack of direct experiment.

Up to 1903 investigation had gone more and more to show that the rat is the important element in plague transmission. To establish this point much preliminary work had been done, particularly with relation to the transmission of the disease by direct or indirect communication with the sick. The inefficiency of this and other causes was decisively established by the course of the epidemic of 1900. In 1903 the rat was acknowledged as the one important etiological factor. The business of killing plague-rats was so effectually accomplished that the last evidence

of the presence of plague in Sydney connected with the preceding outbreak was obtained in August, 1903, when the infection was identified in the carcass of a rat. The epidemic, if it is to be dignified by such a name, described in this report, continued during nine months of the year 1904. Twelve persons were infected with the disease, inhabiting eleven dwellings. Six of these died. Owing in part to the relatively small number of cases the means of infection was investigated with the utmost care with the result that it was possible to obtain the histories of all the cases and to determine by microscopic and cultural examination the probable source of infection. To appreciate the completeness with which this difficult task has been done we must refer our readers to the original work, which stands as a model of painstaking work and accurate deduction. An elaborate map is appended giving the places at which plague-rats were taken during 1904, the places at which persons who had plague were employed and the places at which they resided. While the possibility must be admitted that plague may be disseminated by other means the successive reports from Sydney leave small room for doubt that Dr. Thompson has proved his point that the rat is the sole transmitter in that city.

MEDICAL NOTES.

CHOLERA IN THE PHILIPPINE ISLANDS. — A study of the conditions relating to cholera in the Philippines has led to the opinion that the disease is probably indigenous to the islands and has not been introduced from without, as previously supposed.

ACTING SECRETARY, STATE BOARD OF MEDICAL EXAMINERS OF NEW JERSEY. — Dr. William H. Shipps has been elected Acting Secretary of the State Board of Medical Examiners, of New Jersey, in place of Dr. E. L. B. Godfrey who has been granted a leave of absence until May, 1906.

DR. OSLER'S RETURN TO AMERICA. — A report has been circulated in the daily press that Dr. Osler has resigned his professorship at Oxford University to return to his work at the Johns Hopkins Hospital. The facts of the case appear to be that Dr. and Mrs. Osler are sailing for America to take part in a family gathering of the descendants of Paul Revere, the grandfather of Mrs. Osler. The report that Dr. Osler is permanently to leave England appears to be wholly unfounded.

NEEDS OF THE MEDICAL DEPARTMENT OF THE ARMY. — In a recent lecture Dr. Myles Standish of Boston again calls attention to the inadequacy of the medical establishment of the United States Army. In the course of his remarks he discussed the admirable arrangements of the Japanese army and the scarcely less adequate provision made by the Russian army for the care of the sick and wounded. The poorly manned medical department of the United States army he discussed at considerable length and spoke of the employment of contract surgeons even in times of peace.

THE CLEANLINESS OF HAVANA. — Since the departure of the Americans from Cuban soil the sanitary condition of Havana has degenerated. No penalties were provided for the infringement of the law, hence authority to enforce orders was lacking. The situation has reached such a pass that ordinances have been passed, to be signed by President Palma, which will compel property owners to comply with the orders of the Government Sanitation Board. It is expected that by this new authority rigid regulations regarding cleanliness will be enforced.

HEALTH CONDITIONS ON THE ISTHMUS OF PANAMA. — It is reported that the condition regarding yellow fever at the Panama Canal zone has markedly improved. In October there were but three cases of yellow fever during the month, in spite of the fact that during that month conditions were favorable for its appearance and spread. Of 22,000 Americans, 4,000 were non-immune, but among these there was only one case of fever. Those in authority are disposed to think that the sanitary problem has been practically settled and that laborers may with proper precautions be kept free from the disease.

FIRST CONGRESS OF THE GERMAN RÖNTGEN SOCIETY. — The first volume of the proceedings of the German Röntgen Society has appeared as a goodly volume of two hundred and forty-eight pages. The work is divided into five parts, the first of which is given up to a catalogue of all the attendants at the congress; the second to the exhibits; the third to the scientific sessions with the papers read and the discussions thereon. The general conclusions and various communications made at the meeting, together with a history of the founding of the society, occupy the fourth and fifth parts. The report gives one a vivid idea of the enormous amount of work now being done in this branch of applied medical science.

Decrease in the Number of Medical Students.—According to the *British Medical Journal* the president of the Royal College of Surgeons of England recently deplored the decrease in the number of medical students in England, and he seemed disposed to attribute it to the unreasonable educational requirements of the General Medical Council. The phenomenon is not, however, an isolated one. For a few years past there has been a steady decrease in the number of medical students in France, Germany and the United States. In France the number has diminished from 7,779 in 1895 to 6,763 in 1905. In Germany the number, which from 1858 to 1888 had shown a steady increase, began to fall after that period. While in 1888 there were in German universities 8,513, in 1903 there were only 6,232. The number of students in the United States in 1904 was 28,142; in 1905 it had fallen to 26,147. It is noteworthy that in America the decrease is greatest in the homeopathic colleges.

To Prevent Tuberculosis. — According to *American Medicine*, President Roosevelt has issued an executive order appointing a committee consisting of Surgeon-General Robert M. O'Reilly of the army, Surgeon-General P. M. Rixey of the navy, and Surgeon-General Walter Wyman of the Marine Hospital Service, to inquire into and report to him on the sanitary conditions in government offices and workshops, with a view to the prevention of the spread of tuberculosis.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, Dec. 20, 1905, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 64, scarlatina 44, typhoid fever 9, measles 118, tuberculosis 28, smallpox 0.

The death-rate of the reported deaths for the week ending Dec. 20, 1905, was 17.18.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, Dec. 16, 1905, was 185, against 209 the corresponding week of last year, showing a decrease of 24 deaths and making the death-rate for the week 16.21. Of this number 109 were males and 76 were females; 181 were white and 4 colored; 118 were born in the United States, 66 in foreign countries and 1 unknown; 39 were of American parentage, 128 of foreign parentage and 18 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 44 cases and 2 deaths; scarlatina, 18 cases and no deaths; typhoid fever, 16 cases and 2 deaths; measles, 155 cases and 3 deaths; tuberculosis, 30 cases and 17 deaths; smallpox, no cases and no deaths. The deaths from pneumonia were 42, whooping cough 1, heart disease 13, bronchitis 5 and marasmus 4. There were 6 deaths from violent causes. The number of children who died under one year was 51; the number under five years, 70. The number of persons who died over sixty years of age was 48. The deaths in public institutions were 65.

There were 3 cases and 1 death reported from cerebrospinal meningitis during the week.

Bequest to Cambridge, Mass., Hospital. — By the will of the late John Bartlett of Cambridge, widely known as the author of "Familiar Quotations," the Woman's Aid Association of the Cambridge Hospital receives $5,000.

Bequests to Hospitals. — By the will of the late Mrs. Helen G. Coburn of Boston nearly $500,000 is to be distributed in the form of public bequests. These bequests are in part as follows: Massachusetts General Hospital for a Coburn Fund for free beds, $75,000; Boston Children's Hospital, $50,000; Lawrence, City Hospital for free beds for use primarily by Andover patients, $25,000; Boston Instructive District Nursing Association, $10,000.

NEW YORK.

A Centenarian. — Mrs. Esther Kleinbaum died in Brooklyn, N. Y., on Dec. 9, at the reputed age of one hundred and eight years. According to the statement of a daughter, she was born in Warsaw, Poland, in 1798. She leaves about one hundred and fifty descendants, most of whom live in or near New York.

Death of Miss Ellen Kemble. — Miss Ellen Kemble, a member of one of the old families of New York, died on Dec. 11, after a life devoted to church and philanthropic work. She was born in 1827 in Beach Street, one of the fashionable resident streets at that time, in the lower part of the city. She was one of the organizers of St. Mary's Free Hospital for Children, in 1870, and in recognition of her eminent services in behalf of that institution a bed was endowed bearing her name.

Sanitary Condition of Police Stations. — At the meeting of the Society of Medical Jurisprudence on Dec. 11 the report was received from

a committee appointed in May last to investigate the conditions, sanitary and otherwise, existing in the police stations of the city. The chairman was Alfred E. Ommon, until recently a magistrate, and it was his experience while serving in that capacity which led to his asking the society to appoint such a committee. The medical members were Drs. R. W. Wilcox and C. A. von Ramdohr, and associated with the committee in its work of investigation was a committee from the Civic Club. The report stated that a considerable proportion of the station houses were unfit for habitation either by policemen or prisoners, and declared that no less than nine of them should be entirely torn down. One of the remedial features embodied in it was the suggestion that instead of the police-station prisons, district prisons should be established; such prisons to be located in the center of a police district and adjoining the magistrate's court. Under present conditions, it was stated, much time is wasted in first taking a prisoner to the station house and then to the police court to be arraigned. It was urged, also, that at present if a prisoner needs medical or surgical attention it is necessary to summon an ambulance and have him taken to a hospital. In the district prison, as contemplated, there could be a small hospital, where surgeons might give emergency treatment. The report was adopted by the society and provision made for calling the attention of the city authorities to its strictures and suggestions.

Obituary.

WILLIAM S. FORBES, M.D.

DR. WILLIAM S. FORBES, professor of general descriptive and surgical anatomy of the Jefferson Medical College of Philadelphia, died Dec. 17 of angina pectoris after a short illness. He was seventy-four years of age and was born in Falmouth, Va. During the Civil War he served in a medical capacity in the Union army, and had also seen service with the British army in the Crimea. Dr. Forbes had rendered a service to anatomical science by framing the original Anatomy Act of Pennsylvania which legalized the securing of subjects for dissection throughout the state.

Miscellany.

MOSQUITO WORK IN RELATION TO YELLOW FEVER ON THE ISTHMUS OF PANAMA.

COL. WILLIAM C. GORGAS, of the United States Army, in charge of the sanitation of the Canal Zone, delivered an address, Dec. 8, at the Jefferson Medical College, Philadelphia, before the American Society of Tropical Medicine, under the above title. He spoke more particularly with reference to yellow fever and malarial fever, which two diseases had caused the principal mortality during the building of the railroad and in the attempted construction of the canal by the French. The conditions were much the same as had been encountered in Cuba, except that in Panama mosquitoes breed as readily in January as in July. During the French occupancy the heavy mortality was a potent factor in the failure of the canal work. From his investigations he believes that the French statistics represent not more than half the actual mortality. Under the United States Government authority for doing sanitary work was granted in February, 1905. All cases of yellow fever were required to be reported to the American health authorities, and in addition, all cases of fever of any kind occurring in an American hospital were also required to be reported. Cases were, therefore, received within the first day or two of the disease. The general mortality was about 25% of all cases, the mortality of Americans treated in the hospitals was not more than 10%. The suspected patient was placed in a thoroughly screened ward. In the yellow fever wards the additional precaution is taken of putting each new patient in a wire cage just large enough to cover his bed, where he is kept until the infectious period of the disease has been passed. These wards are also fumigated every two weeks, so that if a mosquito should get in and bite a patient she would not have time to become herself infected, for from twelve to fifteen days' time is necessary for infection and ability of the mosquito to carry it. The house from which the patient is removed and the contiguous houses are likewise fumigated. The stegomyia was described as a very domestic mosquito which generally does not leave the house where she was born and bred, and scarcely the room in which she has lived. The fumigating squads were said to be composed of an experienced foreman and twenty men, and the material generally used was sulphur, although in many stores and the better class of residences many articles were ruined by its employment. Persian insect powder, pyrethrum, was sometimes substituted for sulphur. If a patient elects to be treated at home, the central office is informed, and the patient is thoroughly protected by screens. Only one exit is left to the room and a guard is stationed there who keeps the key and allows only those in and out who are authorized by the doctor. The fumigation of the rest of the house is carried out and the screened room fumigated when the case has terminated. The stegomyia breeds principally in clean rain water, and in Panama the people have depended largely upon rain water for domestic purposes. All receptacles for the water were, therefore, covered and an inspector appointed for each district, concerning the conditions of which he is obliged to report at least twice a week. At the time of the first inspection, about the first of

March, four thousand breeding places were reported; in October about the time Colonel Gorgas left Panama, there were less than four hundred. In the city of Panama it is estimated that 90% of the mosquitoes were stegomyia, while in Havana they constituted only 5% of the mosquitoes. The results of the work are seen in the apparent elimination of yellow fever. In June on the zone there were 67 cases; in July, 40 odd; in August, about 27; in September, about 7; in October, 3; none in November; none so far as observed in December. In the town of Colon the last case occurred July 23. Colonel Gorgas believes, however, that it is necessary to allow at least two months to pass without a case before it can be said with certainty that yellow fever has been eliminated.

Detailed descriptions of the measures against malaria were not given, but they were the same as those carried out in Havana, and now used in the United States generally, principally superficial ditching. The results have been satisfactory. He thought it safe to say that the canal was being dug with as little trouble from sickness as would obtain in a similar project between Philadelphia and Baltimore, and believed that further improvement could yet be secured.

ARE EFFLUVIA PARTICULATE?

Is the sense of smell excited by gases or by particles? is a question which Dr. John Aitken, LL.D., F.R.S., the discoverer of the fact that dust particles in the air are responsible for the formation of fog, has recently studied with very interesting results. In the case, at any rate, of all the odorous substances with which he has so far experimented the answer is decidedly in favor of the gaseous theory. The first substance under investigation was musk, of which it is possible to detect by smell, according to Berthelot, 0.000,000,000,000,01 gm. It would follow that the sense of smell is a refinement exceeding the delicacy of spectroscopic methods, though it is probable that radio-activity may prove to be a still more delicate method of detection. In his experiments, Dr. Aitken relied upon "the cloudy condensation test," in which, if odors are due to particles, these particles become nuclei of cloudy condensation in supersaturated air and thus make their presence visible. Careful tests made in the way indicated and excluding adventitious substances gave no nuclei from the musk, showing that the musk does not give off solid particles, but evaporates as a gas or vapor and that it is gaseous particles from the musk that act on the sense of smell. Of twenty-three other odorous substances not one gave its perfume in solid particles, nothing but gases or vapors escaping from them. The substances tested were as follows: Asafetida, caraway, cinnamon, cloves, cubebs, lavender, nutmeg, pimento, tobacco, sewage, stinkwood (Kaizer Busuk), ammonium carbonate, menthol, zinc valerianate, brass, copper, iron, lilies, roses, sweet-peas, peppermint, rue and sage. The fact that sewage does not communicate to the air any solid particles but that the offensive emanation is a gas is of great interest in connection with the influence of sewage smells on health. Dr. Aitken points out also that our nostrils seem to confirm the conclusion that the perfume given off by substances is not in the same form and probably often not of the same composition as the matter from which it is emitted. The perfume of snuff, for example, "is a soft velvety sensation, whilst the effect of the solid is sharp and biting, more allied to pain than pleasure." Musk, again, when "snuffed" has hardly any effect, only the musky odor is observed when no musk dust touches the nostrils. These observations are very interesting and as bearing upon them it would be equally interesting to know why it is that certain odors are more strongly perceived in pure, fresh air than in stagnant air. Tobacco smoke in a keen northeasterly air is far more fragrant than in a close, stuffy apartment, and ozone appears to have the same effect as the keen air. — *Lancet.*

THE ART OF NOSE BLOWING.

Our contemporary, the London *Practitioner*, under the caption, "How to Blow the Nose," makes the following pertinent comments:

"Every Roman of the brave days of old was doubtless ambitious to be considered an *emunctæ naris homo*, which may be translated as 'up to snuff.' And it is true that a man who blows his nose properly has a claim to be considered exceptionally intelligent, for by the large majority of the human race, or such proportion of it as uses pocket handkerchiefs, that simple act is wrongly performed. A hint on the subject may not be inopportune at the present catarrhal season. Blowing the nose seems to the untutored mind a simple enough matter, and so it is to those who dispense with artificial aid. Here, as in other points of elementary hygiene, it is civilization that is our undoing. In using a handkerchief most people blow more or less violently through both nostrils. If these are obstructed, as they are more or less in a common cold, the back of the throat is filled with compressed air, and this, together with the discharge with the microbes which it contains, may be driven through the Eustachian tube into the middle ear. This may easily lead to serious results. In blowing the nose, therefore, it is well to close one nostril with the handkerchief and blow gently through the other, repeating the process on the other side. A great authority used to forbid his patients to blow their noses at all when they suffered from cold; he held that the handkerchief should be used simply to wipe away discharge. This is a counsel of perfection. But if we must blow, let our blowing be done gently."

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, Dec. 9, 1905.

CITIES.	Population.*	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diphtheria and croup.	Typhoid Fever.	Diarrheal Diseases.
New York		1,295	322	23.68	18.53	3.08	1.00	2.31
Chicago		554	130	24.18	14.98	1.98	1.08	3.97
Philadelphia		479	142	18.99	19.20	3.34	2.71	5.22
St. Louis		—	—	—	—	—	—	—
Baltimore		201	50	20.80	11.95	1.99	2.99	12.44
Cleveland		—	—	—	—	—	—	—
Buffalo		—	—	—	—	—	—	—
Pittsburg		—	—	—	—	—	—	—
Cincinnati		—	—	—	—	—	—	—
Milwaukee		—	—	—	—	—	—	—
Washington		—	—	—	—	—	—	—
Providence		58	12	15.52	15.52	1.72	—	—
Boston	595,380	237	78	12.63	24.05	1.26	.84	1.69
Worcester	128,135	34	12	11.76	29.41	2.94	2.94	5.88
Fall River	105,762	25	11	16.00	24.00	4.00	—	8.00
Cambridge	97,434	25	8	16.00	20.00	—	4.00	—
Lowell	94,889	31	12	19.35	12.90	—	—	3.23
Lynn	77,042	22	3	9.09	4.55	—	4.55	—
New Bedford	74,362	18	5	16.67	27.78	—	—	11.11
Springfield	72,540	26	7	7.69	23.08	—	—	3.85
Lawrence	70,650	28	14	21.43	32.14	3.57	—	—
Somerville	69,373	15	3	6.67	40.00	—	—	—
Holyoke	49,934	15	6	6.67	6.67	—	—	—
Brockton	47,794	10	1	40.00	—	—	—	—
Malden	38,037	16	3	—	18.75	—	—	—
Haverhill	37,620	8	1	12.50	37.50	—	—	—
Salem	37,437	—	—	—	—	—	—	—
Chelsea	37,289	11	1	18.18	45.45	—	—	—
Newton	36,837	2	—	—	50.00	—	—	—
Fitchburg	33,021	8	1	—	12.50	—	—	—
Taunton	30,967	6	0	—	16.67	—	—	—
Everett	29,111	8	2	12.50	—	—	—	—
Quincy	28,076	6	3	100.00	—	16.67	—	16.67
Waltham	26,282	6	1	16.67	16.67	—	—	—
Gloucester	26,011	—	—	—	—	—	—	—
Pittsfield	25,001	4	—	25.00	25.00	25.00	—	—
Brookline	23,436	—	—	—	—	—	—	—
North Adams	22,150	9	1	11.11	—	—	11.11	—
Chicopee	20,191	6	2	33.33	—	—	—	33.33
Northampton	19,957	4	0	—	—	—	—	—
Medford	19,686	5	1	—	40.00	—	—	—
Beverly	18,223	7	1	—	14.29	—	—	—
Newburyport	14,675	7	1	14.29	—	14.29	—	—
Hyde Park	14,510	3	2	—	—	—	—	—
Woburn	14,402	2	—	—	50.00	—	—	—
Leominster	14,297	—	—	—	—	—	—	—
Melrose	14,263	7	0	—	—	—	—	—
Marlboro	14,073	1	0	—	—	—	—	—
Westfield	13,611	1	—	100.00	—	—	100.00	—
Clinton	13,105	3	1	33.33	33.33	—	—	33.33
Peabody	13,098	—	—	—	—	—	—	—
Attleboro	13,762	—	—	—	—	—	—	—
Revere	12,659	2	1	—	—	—	—	—
Adams	12,448	—	—	—	—	—	—	—
Milford	13,105	—	—	—	—	—	—	—
Gardner	13,012	—	—	—	—	—	—	—
Weymouth	11,585	4	0	50.00	—	—	—	—
Framingham	11,548	—	—	—	—	—	—	—
Watertown	11,386	3	0	—	33.33	—	—	—
Plymouth	11,119	—	—	—	—	—	—	—
Southbridge	11,000	3	—	66.67	—	—	—	66.67
Wakefield	10,368	1	—	—	—	—	—	—
Webster	10,018	—	—	—	—	—	—	—

*Census, 1905.

Deaths reported, 3,216; under five years of age, 850; principal infectious diseases (smallpox, measles, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption), 664; acute lung diseases 581, consumption 386, scarlet fever 9, whooping-cough 6, cerebrospinal meningitis 17, smallpox 0, erysipelas 13, puerperal fever 11, measles 20, typhoid fever 45, diarrheal diseases 99, diphtheria and croup 81.

From whooping cough, New York 4, Baltimore 1, Brockton 1. From scarlet fever, New York 6, Chicago 1, Baltimore 1, Quincy 1. From cerebrospinal meningitis, New York 15, Providence 1, Lawrence 1. From erysipelas, New York 4, Chicago 5, Philadelphia 4. From typhoid fever, New York 13, Chicago 6, Philadelphia 13, Baltimore 6, Boston 3, Worcester, Cambridge, Lynn, North Adams and Westfield 1 each. From measles, New York 7, Chicago 4, Philadelphia 4, Boston 3, Cambridge 1, Lawrence 1. From diphtheria and croup, New York 40, Chicago 11, Philadelphia, 16, Baltimore 4, Providence 1, Boston, 3, Worcester, Fall River, Lawrence, Quincy, Pittsfield and Newburyport 1 each.

In the seventy-six great towns of England and Wales, with an estimated population of 15,609,377, for the week ending Dec. 2, 1905, the death-rate was 16.7. Deaths reported 5,005; acute diseases of the respiratory organs (London) 245, whooping cough 81, diphtheria 56, measles 118, smallpox 0, scarlet fever 55.

The death-rate ranged from 5.2 in Kings Norton to 26.6 in Rochdale; London 18.1, West Ham 17.3, Brighton 11.9, Southampton 10.0, Plymouth 18.4, Bristol 18.8, Birmingham 17.5, Leicester 11.2, Nottingham 13.7, Birkenhead 14.4, Liverpool 21.3, Wigan 21.1, Bolton 14.6, Manchester 17.3, Salford 19.8, Halifax 11.5, Bradford 15.6, Leeds 15.6, Hull 14.1, Sheffield 14.3, Newcastle-on-Tyne 19.5, Cardiff 13.6, Rhondda 15.0, Merthyr Tydfil 22.6, Willesden 10.2.

METEOROLOGICAL RECORD.

For the week ending Dec. 9, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

DATE	Barometer.	Thermometer.			Relative humidity.			Direction of wind.		Velocity of wind.		Weather*		
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A.M.	8.00 P.M.	Daily mean.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	Rainfall in inches.
S. 3	29.77	50	61	39	94	96	95	S W	N	15	21	R.	O.	.90
M. 4	29.99	34	39	28	91	57	74	N W	N W	12	14	O.	O.	.02
T. 5	30.46	28	35	22	66	34	45	N W	N W	14	8	C.	C.	0
W. 6	30.36	32	38	25	65	61	63	W	W	10	8	C.	O.	0
T. 7	30.26	40	46	35	68	64	66	W	S W	10	6	C.	C.	0
F. 8	30.24	46	55	36	71	66	68	S W	N	20	12	C.	C.	0
S. 9	30.26	38	39	36	75	70	72	N E	E	15	20	O.	O.	.07
Sr	30.19		45	32			69							.99

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. Sr Means for the week.

RECENT DEATHS.

GEORGE SMITH HYDE, M.D., M.M.S.S., died in Boston, Dec. 11, 1905, aged seventy-four years.

WILLIAM WALLACE GARDNER, M.D., M.M.S.S., died in Springfield, Dec. 11, 1905, aged seventy-nine years.

DR. GEORGE W. MILTENBERGER, probably the oldest physician of Maryland, died in Baltimore last week at the age of eighty-seven. He received his medical degree from the University of Maryland in 1840 and served the institution as professor of obstetrics for thirty-two years. He was later made professor emeritus and given the title of Honorary President of the faculty.

DR. JOHN MULLEN of Portsmouth, N. H., died Dec. 17, at the age of forty-two. He was graduated at Dartmouth Medical School in 1887, and for the last sixteen years has practised at Portsmouth. He has held the offices of city physician and member of the Board of Health.

DR. EDWIN REYNOLDS, for twenty-two years an attending physician and chief of staff of the Brooklyn Home for Consumptives, died on Dec. 15. He was born in Warwick, N. Y., sixty years ago, and was descended from a well-known Massachusetts family. He was graduated from the College of Physicians and Surgeons, New York, in 1877, and afterwards pursued a course of study at the Ecole de Médecine, Paris.

DR. THEODORE DE ECKE, of Utica, N. Y., died on Dec. 16. He was born in Germany and was graduated from the University of Berlin in 1857. He enjoyed a high reputation as a pathologist and expert in chemical research, and was a contributor to scientific publications in Germany, France and Spain, as well as America.

DR. SOLOMON BAIRD WOLFE, a retired physician of New York, died from cardiac disease on Dec. 13, at the age of sixty-one years. He was stricken while making an application for life insurance in the office of the Connecticut Mutual Company, and death was instantaneous. Dr. Wolfe was a native of Baltimore, Md., and in the Civil War was Colonel of the Seventh Regiment, Kentucky Cavalry.

BOOKS AND PAMPHLETS RECEIVED.

A Text-Book of the Practice of Medicine. By James M. Anders, M.D., Ph. D., LL.D. Seventh edition, thoroughly revised. Illustrated. Philadelphia and London: W. B. Saunders & Co. 1905.

A Revision of the Cocoaceal. By C.-E. A. Winslow and Anne F. Rogers. Reprint.

Original Articles.

THE MUSCLE-SPLITTING OR McBURNEY[1] INCISION IN ACUTE APPENDICITIS, WITH OR WITHOUT ABSCESS. THE COURSE AND RESULT IN 75 CONSECUTIVE CASES.

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THE muscle-splitting incision for cases of acute appendicitis, with abscess or without, we wish to advocate and to defend, and, to that end, we adduce the following experience and research:

Technique. — The skin incision is so made that its middle is about three quarters of the distance from the navel to the antero-superior spine. The incision is nearly transverse — that is, it bisects the angle made by the external and internal oblique muscles as they cross each other.

Fibers of the external oblique aponeurosis are recognized, a nick is made with the knife between two fibers and is enlarged by tearing, either with the knife handle or with the fingers. This wound is then held open with retractors.

Thick muscle-fibers of the internal oblique are now seen running nearly at right angles to the external oblique. A nick between fibers, as before, is followed by tearing open of this muscle, as well as the transversalis beneath it, and the properitoneal fat with the two fingers.

After good retraction to the full depths of the wound, the peritoneum is lifted between two forceps, nicked and slit open transversely with blunt scissors.

Closing the wound. — Two or three continuous catgut stitches close the peritoneum.

One catgut stitch holds together the separated muscle bundles of the internal oblique.

One or, at the most, two catgut mattress sutures close the external oblique.

One or two buried catgut stitches hold together the subcutaneous fat.

An intracutaneous silkworm gut or horse-hair stitch closes the skin.

Temporary drainage. — As a precautionary measure, certain early cases of acutely inflamed appendix require drainage for twenty-four hours with gauze or rubber dam. For this purpose the wound is closed as before, except for a passage large enough to admit the drain and in addition 1 or 2 stitches of silkworm gut are put through the skin and external oblique. These stitches are left with their ends tied together and when the drain is removed are tied tightly to close the wound.

Prolonged drainage. — Cases which need drainage for several days or longer, need no sutures unless the wound is larger than needs be for the purpose of drainage.

Enlarging the wound. By enlarging the cut or split in each plane in either direction, as seems necessary, the wound can be made large enough for all exploration desired.

[1] Annals of Surgery, xx, 38.

THE RIGHT RECTUS INCISION.

The rectus incision, so-called, goes through the skin and anterior sheath of the right rectus, the muscle-belly is retracted toward the median line (by some operators the muscle-belly is split), the posterior sheath is cut through and the peritoneum thus opened.

The advantages which lie in this incision are that it can be made quickly; that it allows indefinite enlargement up or down; that it is more anatomical, less destructive, than the early method of oblique incision through everything.

The disadvantages of the rectus incision are, in our opinion, (1) That the rectus muscle varies so much in width in different individuals, that incisions intended to be over the muscle-belly frequently come down directly on the linear semilunaris, making the whole incision direct through the abdominal wall with no safeguard against hernia in cases drained. (2) That there is a considerable chance of wounding the deep epigastric vessels, with troublesome hemorrhage. (3) That, as McBurney says, the incision makes "an overhanging shelf under which one is obliged to work." (4) That this incision frequently opens into clean abdominal cavity, quite internal to the walled-off abscess; that this incision is internal to the plane of the mesenteric origin. It will be remembered that Monks[2] has shown that the mesenteric origin serves to shut off the right iliac fossa to some degree from the rest of the abdominal cavity allowing the fossa to drain first into the pelvis. Repeated cases show that the infection is confined to the region beneath and external to the cecum and we believe it unwarrantable, therefore, to take the chance of being obliged to drain an abscess across healthy gut, if such a procedure can be avoided. (5) In cases drained, the skin tends to retract, leaving a broad area of rectus-belly to granulate in. (6) In cases drained the chance of hernia in the rectus incision is much greater than in the muscle-splitting incision. From the Boston City Hospital records since 1880 we find 22 hernias. This does not represent all the hernias which have occurred but only those which have come back for operation.

Total hernias through appendectomy scars,	22
Through old-fashioned direct oblique incision,	17
Through right rectus incision,	5
Through muscle-splitting incision,	0

These figures need no comment.

THE MUSCLE-SPLITTING INCISION.

The disadvantages of this incision are that it cannot be made so quickly, that it takes a certain amount of delicacy of dissection and care, particularly if it is to be enlarged. (2) In cases of prolonged drainage much more care and dexterity is required in replacing the wicks and in maintaining the drainage. This, we believe, has been the main ground for objection to this incision. (3) A recent writer[3] has said, "The gridiron incision

[2] Annals of Surgery, Oct. 1905, xlii, p. 534.
[3] BOSTON MEDICAL AND SURGICAL JOURNAL, Sept. 28, 1905, cliii, 360.

should never be used in operating for an attack of acute appendicitis. As one never can tell what the condition of the appendix is, there is danger in an incision which cannot be enlarged without serious damage to the parts."

With this we entirely disagree.

The advantages of the muscle-splitting incision are: (1) That in most cases it opens directly over the seat of the disease; (2) that it is worth the care necessary to enlarge it properly, since even after prolonged drainage we can practically assure the patient that he will have no hernia. From the moment the patient leaves the operating table every movement involving contraction of the abdominal muscles tends to bring together the splits in these muscles and thus close the gridiron; (3) because of this tendency of the wounds to come together, stitches are of almost no advantage, and the surgeon is, therefore, never tempted to omit the safeguard of temporary drainage in doubtful cases.

The following consecutive cases, occurring in hospital and private practice, all acute cases, with or without abscess, were operated without exception by the muscle-splitting incision.

CASE I. Female, seventeen. One year, 4 mild attacks. Six days' pain, nausea, vomiting, fever and diarrhea, continuously worse. Temperature 101.5°, pulse 100. Abdomen moderately distended, tympanitic everywhere except right lower quadrant, where there is dullness, spasm and tenderness. Deep palpation shows a mass. Gridiron or muscle-splitting incision. Seven ounces thick, foul-smelling pus from a walled-off cavity. Appendix at bottom of cavity, gangrenous and behind cecum. Appendix removed, cavity swabbed out and drained, rapid convalescence. Firm scar.

CASE II. Male, thirteen. Six months ago first attack. Three days ago general abdominal pain, shortly localized, nausea and vomiting. Temperature 102°, pulse 120, abdomen not distended, general spasm, more marked on right with tenderness, no mass. Gridiron incision, large red appendix with gangrenous tip, found hanging over pelvic brim, tied off and removed. Discharge six days with wicks. Rapid healing, firm scar.

CASE III. Male, twenty-six. First attack began forty-six hours ago. General cramps, nausea, vomiting and fever. Pain now at its worst, but somewhat localized. Temperature 102°, pulse 90, abdomen slightly retracted with general spasm, more on the right, relatively dull in right iliac fossa, no mass, urine shows ¼% albumen. Gridiron incision, free straw-colored fluid, slightly turbid, appendix found deep behind cecum, with proximal half gangrenous. Two fecoliths and free feces. Thin pus fills bottom of fossa and pours up from pelvis. Appendix removed. Left rectus counter-incision made and whole abdominal cavity washed out and drained. Patient died at the end of third day.

CASE IV. Male, twenty-seven. Two previous attacks, sixteen months and four months ago, in bed one week and three weeks respectively. Four days ago right lower pain, fever but no chill, nausea or vomiting. Temperature 100.2°, pulse 84, abdomen not distended, some right spasm, mass felt deeply. Gridiron incision. Large, thickened appendix with a perforation at its distal end found, surrounded and bound down by numerous old and recent adhesions, alongside of iliac artery. Small amount foul-smelling pus found near its base. Pus wiped out, appendix enucleated, tied off and removed. Discharged with firm scar.

CASE V. Male, fourteen. Two previous attacks; two years and one year ago, in bed one week and three days respectively. Three days ago sudden onset of general cramp, chill, fever, nausea and vomiting. Temperature 101°, pulse 96, abdomen silghtly distended, general tympany and spasm, most on right, no mass. Gridiron incision. Old adhesions found burying appendix with pus near the base. Pus wiped out, appendix tied off and removed; uneventful convalescence, firm scar.

CASE VI. Male, forty-five. First attack three days ago. Gradual onset of dull, cramp-like pain in epigastrium; vomiting and gradual shift of symptoms into right lower quadrant. Temperature 99.2°, pulse 84, abdomen not distended, moderate right spasm, slight local dullness, tenderness and deep sensation of a mass. Gridiron incision. Appendix found near middle line, bound down at its tip, thickened and injected. On stretching wound with fingers, tip was reached and appendix removed without difficulty. Drained one day, and then closed by sutures placed at time of operation; firm scar.

CASE VII. Male, thirty-two. One previous attack nine months ago, two days' duration. Two days ago right lower pain, nausea, no vomiting. Temperature 100°, pulse 98, slight general spasm, localized tenderness, no mass. Gridiron incision. Appendix found high behind cecum, injected and swollen. Removed; rubber-dam drainage twenty-four hours, then provisional sutures tightened. Firm scar.

CASE VIII. Male, twenty-three. First attack twenty-four hours' duration. Vomiting, diarrhea and several chills. Temperature 100.1°, pulse 125, general tenderness, but spasm mostly on the right, no mass made out. Gridiron incision. Gangrenous appendix found entirely in pelvis, but reached without difficulty upon stretching the wound. Tied off and removed, drained two days after which the skin wound was closed with a net work of straps of zinc oxide plaster. Firm scar.

CASE IX. Male, fourteen. First attack three days' duration. Pain in right lower quadrant, with vomiting. Temperature 103°, pulse 115, leucocytes 38,000. Spasm and tenderness in appendix region with mass size of an egg. Gridiron incision. Immediate escape of thin yellow pus; finger enters a small, well-marked cavity in which the appendix lies, walled off by light adhesions, with perforation near its base. Appendix removed, gauze drainage. Wound closed on the fifth day with straps. Firm scar.

CASE X. Female, twenty. First attack twenty-four hours' duration, pain in epigastrium, has become localized in right iliac fossa. Vomited once. Temperature 99°, pulse 132, occasionally intermittent. Whole abdomen rigid with general tenderness, worst in right lower quarter, slight dullness in both flanks. Gridiron incision. Properitoneal fat, edematous, immediate discharge of thin, yellow pus, appendix presents itself through the wound and is removed. No adhesions and voluminous discharge of pus from whole cavity. Median incision made below navel three inches long, and at the same time a vaginal incision made into the pouche of Douglas, whole cavity irrigated with many quarts of hot salt solution and tube drainage established through the vagina. Median incision left open but with provisional sutures. Drainage maintained and encouraged by frequent irrigation during first twenty-four hours. Rapid convalescence. Bacteriology; Streptococcus, Staphylococcus Albus, B. Coli.

CASE XI. Female, eighteen. Three previous attacks.

The last one resulted in a general peritonitis (observed by writer) and the discharge of many ounces of pus through the rectum. One week ago, while patient was convalescent from the attack just described, there appeared a renewal of pain, vomiting and diarrhea. Temperature 100°, pulse 120, abdomen distended and tympanitic except for whole right quarter, which is flat to percussion. Gridiron incision. Immediate escape of thick, foul pus; appendix found in relation with sacrum in a glued mass of omentum and intestine. Removed; deep gauze drainage, rapid healing. Skin drawn together with straps later. Eight months later, perfectly firm scar with no suggestion of bulging.

Case XII. Female, forty. Two previous attacks in six months, the second the worse. Nine days ago sharp, general, abdominal pain, later localized in lower right side. Vomited once, fever and chills. Pain now at its worst. Temperature 101°, pulse 120. Tenderness and spasm in right lower quarter under linea. Semilunaris where there is also a rounded mass, size of a tennis ball. Gridiron incision. Immediate escape of several drams of pus. At the bottom of a walled-off cavity internal to right iliac artery were found the remains of a necrotic appendix, the stump of which had closed itself. Discharged, firmly healed.

Case XIII. Male, fifty. First attack eight days, right-sided pain, vomiting and constipation. Temperature 99.5°, pulse 72, right-sided spasm in the appendix region is a tender, definitely visible mass, size of an orange. Gridiron incision. Immediate discharge of 2 oz. thick, yellow, foul pus from a well-defined cavity. To find the appendix the cecum had to be pulled out of the wound, the appendix running upwards and outwards from it. Rapid healing with firm scar.

Case XIV. Female, thirty. Extra-uterine pregnancy with twisted pedicle, mistaken for appendicitis. First attack. Ten hours ago sharp pain in right lower abdomen with chill and vomiting. Temperature 98°, pulse 86. Marked tenderness and spasm one inch below McBurney's point. Patient supposed to be *virgo intacta*, therefore, no vaginal examination made. Gridiron incision, appendix found to be apparently normal. On stretching the wound with the fingers there was no difficulty in exploring the right side of the pelvis. This revealed in the position of the right tube a mass 2½ inches long by 1½ inches in diameter. At the proximal end the tube was twisted on itself and the mass thereby strangulated, black in color. The mass was tied off and the wound closed. Discharged firmly healed.

Case XV. Male, twenty-three. Three attacks in last six months. Temperature 99.5°, pulse 94. Deep tenderness at McBurney's point, no spasm. Gridiron incision. Appendix red, thickened, 4½ inches long, found over brim of pelvis, removed and wound closed. Perfect healing with firm scar.

Case XVI. Female, twenty-four. First attack began five weeks ago with right-sided pain, slight chills and constipation. This condition has persisted. Temperature 99.5°, pulse 96. Deep tenderness in right iliac fossa, also elicited by vaginal examination. No mass felt. Gridiron incision. Injected appendix found lying free. Kindly healing of the immediately closed wound.

Case XVII. Female, twenty-eight. First attack began three weeks ago with pain in right abdomen and right flank, gradually increasing to three days ago when it became worse, accompanied by vomiting and fever. Temperature 101°, pulse 104, moderate tenderness in the right iliac region with deep sense of resistance, vaginal negative. Gridiron incision. Appendix found adherent throughout its length, retrocecal. To remove it the whole cecum had to be delivered through a one-inch incision. Firm scar.

Case XVIII. Male, twenty-one. First attack. Two days ago general abdominal pain with vomiting and fever. Pain has increased continuously. Temperature 101.8°, pulse 120. General tenderness and spasm, somewhat worse on the right side in the lower part. Gridiron incision. Turbid fluid, free in abdominal cavity. Appendix found almost wholly within pelvis, surrounded by very soft adhesions and gangrenous at its tip. Removed and the pelvis thoroughly wiped out with gauze. Discharge of pus for five weeks, scar firmly healed.

Case XIX. Male, nineteen. First attack began two days ago with occasional crampy pain in right lower abdomen. Vomiting, fever and diarrhea. Temperature 100.4°, pulse 100. Looks sick, general spasm. The tenderness apparently greatest in appendix region. Gridiron incision, immediate escape of clear fluid, appendix beneath cecum large, congested and covered with white flakes. Pelvis full of turbid serum. Appendix removed, pelvis sponged and drained. Firm scar in five weeks.

Case XX. Male, twenty-four. Previous attack one month ago, lasting five days. Four days ago right lower cramps. These spasms have continued with vomiting and obstipation. Temperature 99.5°, pulse 100. Marked spasm and tenderness in right hypogastrium, but with no other signs of bladder implication. Gridiron incision. Appendix found adherent its whole length to the mesentery of the small intestine. Considerable hemorrhage, could be controlled only by packing. Packing removed fourth day, no further bleeding, and the wound healed firmly in three weeks.

Case XXI. Male, fifteen. First attack twelve hours ago with pain in right lower abdomen, vomiting and repeated chills. Temperature 102°, pulse 98. Marked spasm and tenderness of right belly muscles. No dullness or mass made out. Gridiron incision. Free, cloudy serum. Appendix quite extra-peritoneal behind cecum, making it necessary to deliver the whole cecum. Some oozing controlled by gauze. Pack removed end of twenty-four hours and skin closed with plaster. Firm scar.

Case XXII. Female, thirty-nine. First attack two days ago. Sharp pain in epigastrium which yesterday became localized in the appendix region. Temperature 100°, pulse 120. General tenderness, dullness and marked spasm in right iliac fossa. Gridiron incision. Immediate escape of 2 ounces of foul pus. All presenting intestine, covered with fibrin. Pus seems to be at present anatomically confined to the right lower quarter, but cloudy fluid came with pressure on any part of the abdomen. Appendix showed perforation ½ inch from the tip. Right lower quarter and pelvis wiped dry and drained. Clean incision in left semilunar line, much fluid drained off. Patient died of the continued peritonitis on the fifth day.

Case XXIII. Male, thirty-four. First attack. Three days ago pain in region of navel with vomiting and chills. Temperature 100°, pulse 100. General spasm, mostly voluntarily, most tenderness in appendix region where there is a mass dull to percussion, size of a hen's egg. Gridiron incision. Localized abscess, appendix in a mass of omentum and hard to identify from an epiploic mass, but after a time found and removed. Gauze drain three days. Firm scar.

Case XXIV. Female, seventeen. First attack two months ago. Twenty-two hours ago, sharp knife-like pain in right lower abdomen, continuously worse, in spasms, till now, with nausea. Temperature 99.6°,

pulse 84. Exquisitely tender area over appendix region, with spasm of muscles. Gridiron incision. Cecum had to be delivered to reveal the appendix. This organ found sharply constricted by a band about its middle. Removed. Firm scar.

CASE XXV. Male, twenty-five. Two attacks within a year, with vomiting, pain and fever. Eighteen hours ago fresh onset of cutting pain in appendix region, with chills (nervous) and nausea. Pain fixed in position. No urinary sighs or symptoms. Temperature 98.4°, pulse 80. Sharply fixed sore spot under McBurney's point. Gridiron incision. Appendix lies up under cecum turning inwards along ileum and adherent. Removed. Firm union. Examination one year later. So little scar tissue that skin slides freely over the subjacent muscles.

CASE XXVI. Female, twenty-nine. Two attacks within five months, acute pain, vomiting; the second less severe but longer in duration. Three days ago onset of pain with increasing soreness in right fossa. Temperature 99.4°, pulse 100. Tenderness and spasm locally. Vaginally, a small mass to right of uterus under ether, sharp anteversion and flexion of uterus to the right is made out. Gridiron incision. Appendix found completely constricted at its middle and adherent in its full length to the cecum. Removed. Uninterrupted convalescence. Firm scar.

CASE XXVII. Female, twenty-one. First attack thirty hours ago; wakened by sharp pain in appendix region. Shortly developed soreness. Constipated. Temperature 100°, pulse 108. Abdomen distended and generally spasmodic. Tenderness and spasm most marked in lower right rectus region. Vaginal negative. Gridiron incision. Immediate escape of purulent fluid: a forming abscess apparently not walled off, but yet anatomically localized. Appendix red, with flakes. Removed. Gauze drain. Firm scar.

CASE XXVIII. Male, thirty-two. First attack six months ago when a gridiron incision was made by another surgeon and the patient was so sick it was deemed unwise to search for the appendix. Sinus has discharged ever since. Temperature 99°, pulse 72. Scar in skin excised. Gridiron incision made apparently in exactly same situation as before. Appendix readily found, bound by dense adhesions and removed. Firm union.

CASE XXIX. Female, twenty-four. First attack; six weeks of grumbling pain in right iliac fossa; much worse last four days with nausea and chilly sensations. Temperature 100°, pulse 100. General distention, marked tenderness and considerable spasm, but mostly voluntary in appendix region. No mass felt. Vaginal examination, question of right pelvic mass. Gridiron incision, 1 inch long. Appendix found curled up behind cecum, adherent throughout its length, red and covered with fibrin flakes at its tip. Removed. Temporary drain.

CASE XXX. Female, thirty. First attack; seventy hours of acute pain in right lower quarter with nausea, two chills and now apparently better. Temperature 102.8°, pulse 120. Much spasm and tenderness to whole right half. No mass could be made out, if present, on account of spasm. Gridiron incision, 1 inch long. Appendix found behind cecum, lying transversely, imbedded in wall of cecum. Cecum delivered, appendix tied off at its base and afterwards separated from cecum. Temporary drain.

CASE XXXI. Female, twenty-one. First attack began thirty hours ago with sudden knife-like pain and vomiting. Progressively worse since. Temperature 101°, pulse 100. Spasm and definite sense of resistance deep in right iliac fossa. Vaginal examination not made. Gridiron incision. Appendix found lying on brim of pelvis, red and swollen, in light adhesions. Removed. Drained eight days. Firm scar.

CASE XXXII. Male, eight. Probably first attack of general abdominal pain with chills and fever and repeated vomiting. Temperature 101°, pulse 128. General distention of abdomen with apparently more tenderness and a definite mass in right lower quarter. Gridiron incision. Large abscess with appendix entirely gangrenous at its bottom. Removed. Drained. Firm scar.

CASE XXXIII. Female, eighteen. Probably two previous attacks. Thirty hours ago cutting pain in right iliac region with soreness and prostration. Temperature 100°, pulse 92. Marked right-sided spasm; localized tenderness, thigh drawn up. Gridiron incision through fat abdomen. Small red edematous appendix readily found. Removed. Drained five days. Scar perfectly firm one year later.

CASE XXXIV. Male, fifty-three. First attack six months ago. Sixteen hours ago general abdominal pain shortly becoming localized. Chills and violent sweating. Temperature 101.8°, pulse 90. Marked right spasm and localized tenderness. Cutting pain followed by chill twice in the last hour. Gridiron incision. Appendix found with one gangrenous spot ready to perforate. Firm scar at the end of three years.

CASE XXXV. Female, sixteen. First attack began twenty hours ago. Sharp, grinding pain, some bearing down, right thigh drawn up, vomiting. Temperature 102.2, pulse 100. Much abdominal tenderness, mostly in right lower quarter; too much spasm for good palpation. Vaginal examination not made. Gridiron incision. Appendix found apparently normal. Right Fallopian tube found swollen, red and apparently containing fluid. Incision enlarged by extending muscle splits and tube removed without much difficulty. Found to be filled with pus. Wound closed. Rapid convalescence. Firm scar.

CASE XXXVI. Male, thirty-five. First attack; for three days right iliac pain, nausea and vomiting. Egg-sized mass in right lower quadrant. Gridiron incision; abscess containing 3 ounces of pus; appendix removed. Normal convalescence. Firm scar.

CASE XXXVII. Male, twenty-one. Three previous attacks. For six days all classical symptoms; considerable sized mass in right lower abdomen, lower than usual for appendix. Gridiron incision. Large subcecal abscess; appendix found. Normal convalescence. Firm scar.

CASE XXXVIII. Male, forty-three. No previous attacks. For six days right iliac pain with constipation. Large mass palpable in appendix area. Gridiron incision. Subcecal abscess containing 7 ounces of pus; appendix not looked for; no fecal fistula. Normal convalescence. Firm scar.

CASE XXXIX. Male, twenty-nine. First attack. For thirty-six hours right iliac pain, nausea, vomiting and constipation. Abdomen held everywhere in intense spasm. Gridiron incision. Subcecal abscess, gangrenous appendix removed. Normal convalescence. Firm scar.

CASE XL. Male, twenty-one. One previous attack. For twenty-four hours symptoms of fulminating appendicitis; general abdominal spasm. Gridiron incision. Swollen gangrenous appendix found in normal position with tip pointing toward umbilicus. Drainage for five days. Firm scar.

CASE XLI. Female, twenty. First attack. For two days classical symptoms. Egg-sized mass felt in appendix area. Gridiron incision. Subcecal abscess containing 2 ounces of pus; appendix found. Normal convalescence. Firm scar.

Case XLII. Male, thirteen. First attack. For twenty-four hours iliac pain with vomiting. Considerable general distention and spasm. Gridiron incision. Abdominal cavity filled with turbid fluid; fibrin flakes everywhere; swollen gangrenous appendix in normal position. No localized pus; no other incisions. Recovery. Firm scar.

Case XLIII. Female, twenty-one. First attack. For four days right iliac pain, nausea, vomiting and constipation. Medium-sized appendix mass palpable. Gridiron incision. Large subcecal abscess containing necrotic appendix. Normal convalescence. Firm scar.

Case XLIV. Female, twenty-eight. First attack. For ten hours all classical symptoms of fulminating appendicitis. Right-sided spasm and localized tenderness. Gridiron incision. Reddened, swollen appendix found in normal position. Normal convalescence. Firm scar.

Case XLV. Male, twenty-four. Second attack. For five days a typical story of appendicitis. Large mass palpable in appendix area. Gridiron incision. Large subcecal abscess containing 2 ounces of pus. Appendix found pointing up toward hepatic flexure. Normal convalescence. Firm scar.

Case XLVI. Male, thirty-one. Second attack. For three weeks increasing pain in right lower quadrant with constipation, occasional nausea and vomiting, and considerable difficulty in locomotion. Considerable resistance in right lower abdomen with marked tenderness over McBurney's point. Appendix questionably palpable. Gridiron incision. Thick, swollen, reddened appendix in normal position, surrounded by thick, tough adhesions. Drainage for three days. Normal convalescence. Firm scar.

Case XLVII. Male, twenty-six. Ten previous attacks. For eight days right iliac pain, nausea, vomiting and constipation. Right-sided spasm and tenderness, most marked over McBurney's point. Gridiron incision. Swollen, reddened appendix found under cecum, surrounded by dense adhesions. Normal convalescence. Firm scar.

Case XLVIII. Female, twenty-one. First attack. For nine days all classical symptoms. Large mass palpable in right lower quadrant rather more toward median line than usual. Gridiron incision. Large appendix abscess, appendix extending nearly horizontally to the left. Normal convalescence. Firm scar.

Case XLIX. Female, sixteen. First attack. For three days typical history of appendicitis. Considerable spasm and tenderness in right lower quadrant. Gridiron incision. Small subcecal abscess; appendix found. Normal convalescence. Firm scar.

Case L. Male, thirteen. First attack. For four days right iliac pain, chill, nausea and vomiting and constipation. Fair-sized mass, palpable low down in right lower quadrant, encroaching on hypogastrium. Gridiron incision. Appendix found with tip pointing down over brim of pelvis. Small abscess about proximal end. Death in twenty-four hours from general septicemia.

Case LI. Female, seventeen. First attack. For eight and a half days all classical symptoms. Large mass palpable in right lower quadrant. Gridiron incision. Appendix found in the subcecal position with tip pointing toward umbilicus. Abscess cavity containing 1 ounce of pus. Normal convalescence. Firm scar.

Case LII. Male, twenty-two. First attack. For six days typical history of appendicitis. Egg-sized mass palpable in appendix area. Gridiron incision. Subcecal appendix with abscess containing 2 ounces of pus. Normal convalescence. Firm scar.

Case LIII. Female, fifty-four. First attack. For fourteen days right iliac pain, frequent chills, constant fever, nausea and vomiting and constipation. Considerable general distention with marked tenderness over large resistant mass in right lower quadrant. This tumor encroaching on quadrants above and to the left. Gridiron incision. Large appendix abscess containing 9 ounces of foul-smelling pus. Fragments of necrotic appendix found in débris. Normal convalescence. Firm scar.

Case LIV. Male, twenty-nine. First attack. For three weeks occasional pain and soreness in right lower quadrant, these becoming extremely acute the last three days. Marked tenderness and spasm in right lower quadrant, especially low down and to the left. Gridiron incision. Appendix found pointing toward umbilicus, with abscess containing 2 ounces of pus. Normal convalescenec. Firm scar.

Case LV. Male, twenty-three. First attack. For twenty-four hours classical symptoms of fulminating appendicitis. Marked resistance and tenderness in right lower quadrant and right interior lumbar region. Considerable mass palpable. Gridiron incision. Lower end of cecum found one and one-half inches above upper end of wound as originally made. Wound enlarged by prolonging the muscle splits. Small subcecal abscess; numerous relatively tough adhesions, gangrenous appendix delivered with some difficulty. Normal convalescence. Firm scar.

Case LVI. Female, twelve. First attack. For three days umbilical pain, sharp in character, gradually localizing in right lower quadrant, accompanied by chill, fever, nausea, vomiting and constipation. General spasm, most marked in right hypogastrium and inner part of right lower quadrant. Marked tenderness diffusely over same area. No mass palpable. Gridiron incision. Appendix reddened, swollen, and almost ready to perforate found extending down over brim of pelvis, surrounded by light adhesions. Drainage for three days. Normal convalescence. Firm scar.

Case LVII. Female, eight. First attack. Forty hours ago acute appendicular pain with chill, fever and vomiting. Marked spasm and tenderness in right iliac and adjoining portion of hypogastric regions. Gridiron incision. Enlarged and swollen appendix found pointing downward and inward and extending over the brim of the pelvis; very delicate adhesions. Wound closed. Normal convalescence. Firm scar.

Case LVIII. Female, thirty-eight. No previous attacks. For three days progressively increasing epigastric pain with almost no localism in right iliac region. Considerable general abdominal spasm with marked tenderness, just to right of umbilicus. Gridiron incision. Appendix tied down with dense adhesions (chronic?); direction of appendix (subcecal) upward and inward; removed with great difficulty. Normal convalescence. Firm scar.

Case LIX. Female, eighteen. Three previous attacks. For four days classical symptoms with the exception of the locality of the pain which was so low as to suggest pelvic disease. Marked right lower abdominal tenderness and spasm. Mass palpable in lowest part of right lower quadrant. Gridiron incision. Light adhesion surrounding a swollen, reddened, ready-to-perforate appendix, extendingd own over pelvic brim. Wound closed. Normal convalescence. Firm scar.

Case LX. Female, twelve. No previous attacks. For three days typical history of appendicitis. Mass size of hen's egg palpable in right lower quadrant where there is much spasm and tenderness. Gridiron incision. Abscess containing 2 ounces of foul pus. Gangrenous appendix pointing down into pelvis. Normal convalescence. Firm scar.

CASE LXI. Male, twenty. First attack. For two days characteristic pain, chill, vomiting and constipation. Marked localized tenderness, spasm and palpable mass. Gridiron incision. Retrocecal appendix with abscess containing 2 drams of pus. Normal convalescence. Firm scar.

CASE LXII. Male, nineteen. First attack. For two days typical pain with vomiting and constipation. Marked local spasm and tenderness. Gridiron incision. Immediate escape of pus. Gangrenous, perforated appendix, heavily coated with fibrin and surrounded by dense adhesions; entire mass retrocecal. Normal convalescence. Firm scar.

CASE LXIII. Female, forty-three. First attack. For three days characteristic symptoms. Marked tenderness under right rectus and inner part of right lower quadrant. General spasm over same area. Gridiron incision through edematous abdominal wall. Retrocecal abscess containing 4 drams of pus; appendix gangrenous and perforated, extending down over the brim of the pelvis. Normal convalescence. Firm scar.

CASE LXIV. Male, fourteen, deaf, dumb and blind. First attack. For four days vomiting, chill, fever and right iliac pain and soreness. General distention, right iliac spasm and tenderness, and palpable mass size of hen's egg. Gridiron incision. Subcecal abscess containing 1 ounce of pus. Appendix found curled on itself and pointing upwards and inwards. Removed with difficulty. Death on eighth day from pneumonia.

CASE LXV. Male, forty-four. First attack. For two weeks progressively increasing right iliac pain with repeated chills, nausea, vomiting and obstipation. Marked appendicular tenderness with general spasm and distention. Large mass palpable in right lower quadrant. Gridiron incision. Large subcecal abscess containing 10 ounces of foul pus. Appendix found curled upon itself, buried in adhesions, pointing upwards and inwards. Normal convalescence. Firm scar.

CASE LXVI. Male, twenty-seven. First attack. For three days characteristic symptoms becoming progressively worse. Large right iliac mass with localized spasm and tenderness. Gridiron incision. Dense adhesions, containing 4 ounces of pus in several pockets. Mass on the whole retrocecal. Appendix gangrenous, perforated and adherent to omentum. Normal convalescence up to 18th day when sudden death from cardiac embolism.

CASE LXVII. Male, twenty-six. First attack. For three days colicky pains in right lower abdomen without other symptoms. Abdomen generally distended, rigid and tender, with most tenderness just to right of umbilicus where a small mass can be felt. Gridiron incision. Abscess containing 3 drams of pus and a gangrenous, perforated appendix. Normal convalescence. Firm scar.

CASE LXVIII. Female, twenty-two. One previous attack one year ago. For six days general abdominal pain, chill, vomiting and constipation.. General distention, tenderness and spasm, most marked, however, over McBurney's point. Gridiron incision. Swollen, reddened appendix, extending over brim down into pelvis with light adhesions surrounding it; drainage for five days. Normal convalescence. Firm scar.

CASE LXIX. Male, thirteen. First attack. For three days all classical symptoms progressively becoming worse. Marked lower abdominal spasm with localized tenderness in the lower part of the right iliac region, suggesting to palpation an asymmetrically distended bladder. Gridiron incision. Abscess cavity containing 1 ounce of pus. Appendix extending down over brim of pelvis. Normal convalescence. Firm scar.

CASE LXX. Male, twenty-five. First attack. For two weeks grumbling pain in right lower quadrant with fever, vomiting and constipation. Marked tenderness and spasm over McBurney's point; mass size of hen's egg. Gridiron incision. Retrocecal abscess containing gangrenous appendix. Normal convalescence. Firm scar.

CASE LXXI. Female, twenty-five. Two previous attacks. For three days typical history of appendicitis. No distention. Right iliac spasm, tenderness and palpable mass. Gridiron incision. Retrocecal abscess containing 2 ounces of pus and a gangrenous appendix. Normal convalescence. Firm scar.

CASE LXXII. Male, fifteen. First attack. For eight days intense right-sided pain, nausea, vomiting and constipation. For three days delirium and symptoms of septic exhaustion. Large right iliac mass with tenderness and spasm. Gridiron incision. Abscess containing about one pint of foul pus. Gangrenous appendix. Death on fifth day from septicemia.

CASE LXXIII. Female, sixteen. First attack. For five days all classical symptoms. Mass size of hen's egg in right lower quadrant with spasm and tenderness. Gridiron incision. Large subcecal abscess containing 2 ounces of pus. Gangrenous, perforated appendix, high up under cecum. Normal convalescence. Firm scar.

CASE LXXIV. Male, thirty-seven. Third attack. For six days right iliac pain and vomiting; last two days recurrent chills and fever. Considerable sized mass just outside McBurney's point with marked tenderness and spasm. Gridiron incision. Subcecal appendix abscess containing 3 drams of pus. Gangrenous perforated appendix. Normal convalescence. Firm scar.

CASE LXXV. Male, eighteen. First attack. For four days classical symptoms becoming progressively worse. Marked localized tenderness and spasm. Gridiron incision. Large, clubbed, reddened, swollen appendix about to perforate, extending down over pelvic brim. Numerous light adhesions. Temporary drainage for twenty-four hours. Normal convalescence. Firm scar.

CONCLUSIONS.

The incision through the right rectus, as well as that through the right linea semilunaris, is undesirable.

This we conclude because: (1) It is usually not over the appendix; (2) it is frequently internal to the abscess, therefore giving mechanically inefficient drainage; (3) it offers in cases drained a distinctly greater chance of hernia.

The muscle-splitting or McBurney incision is desirable in all cases of appendicitis, unless an abscess is obviously pointing in a remote or unusual situation.

This we conclude because: (1) It opens most often directly over the appendix; (2) it can be enlarged by prolonging the split in each muscle-plane to whatever extent is desirable; (3) it can be drained for a short or a long time without danger of hernia.

THE MUNICIPAL CONTROL OF TUBERCULOSIS.*

BY EDWARD O. OTIS, M.D., BOSTON.

THE subject of municipal control of tuberculosis suggests at once two questions: in the first place, are the conditions regarding the disease

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such and so urgent as to demand active interference on the part of the city and town authorities? Secondly, if so, what agencies are to be employed in establishing and maintaining an efficient control, agencies such as legitimately come within official jurisdiction? You have already answered the first question in the affirmative by your choice of the subject for discussion, and it is hardly necessary to spend much time in its consideration.

Throughout the civilized world at the present moment, tuberculosis is regarded as one of the greatest calamities of modern times, producing untold misery upon thousands of mankind. It is co-extensive with civilization, and exists in every latitude and climate. It is one of the largest, if not the largest, single cause of death. Year after year unceasingly its ravages continue. In the present epidemic of yellow fever in New Orleans which has produced such consternation and terror, and such frantic efforts to control it at enormous expense, the mortality will hardly reach four hundred and fifty deaths, and from previous experience it is not likely to happen for many years, if ever again. The yearly mortality from tuberculosis, on the other hand, in the same city is a little over a thousand, more than twice the number of deaths from the present yellow fever epidemic. But tuberculosis will not only destroy its thousand inhabitants this year, but next year, the year after, and every year. A similar condition exists in every city and country.

Formerly and even, to a certain extent, at the present time, this great prevalence of tuberculosis was regarded with comparative equanimity and indifference as an inevitable concomitant of civilized life from which there was no escape, and, consequently, no organized or concerted action was taken to control it. Now, however, since the disease is known to be communicable and avoidable, and the method of its communication and avoidance has been made clear, the attitude of the physician, sanitarian and, as well, the public, is no longer that of hopeless apathy, but rather one of active interest and aggressive warfare against it.

There is, then, abundant reason intrinsically why the municipality should take active and energetic measures for its control, and ample precedent in the example of other countries and cities. One has only to look abroad and observe the anti-tuberculosis crusade now in progress throughout the civilized world. In our own country we have the National Association for the study and prevention of tuberculosis, with many state and local societies of a similar nature. Sanatoria already exist in a number of states and are projected in many others.

Taking up the second question of the methods to be employed in the control of the disease, and which can best or only be initiated and conducted through the instrumentality of the organized city or town governments working through their boards of health, we have, first, the compulsory notification and registration of all cases of tuberculosis, for you must locate the enemy before you can attack him. In this state (Massachusetts) one has only to put tuberculosis on the list of contagious diseases to make the state law requiring the notification of all such diseases applicable to it. If the physicians will only recognize their duty to the community in reporting all cases in which the diagnosis can fairly be made out whether or not tubercle bacilli are discovered in the sputum, the board of health will thus be enabled to track the disease, which is the first step towards the control. As tuberculosis is most prevalent in the crowded, unsanitary quarters of the poor, it is of the first importance that a complete registration of the cases in the tenement-house district should be obtained so that the foci of infection can be kept under surveillance. There will always be some cases which employ no physician, at least regularly, and such either go undetected or are discovered by chance. Hospitals and dispensaries, when they exist, societies for the relief and control of tuberculosis, through their visitors or district nurses, can co-operate with the board of health in the work of discovering the cases. But, after all, it is the private physician upon whom we must principally rely.

Having found the cases, what is the next step? Unless the patients are in such families or under such medical supervision as will give assurance that proper prophylactic measures will be established and maintained, the board of health sends an agent to the home or lodging of the reported case, whose duty it is to instruct the patient and his family as to the safe disposal of the sputum, and, in general, how the consumptive can make and keep himself innocuous to those about him. Such a visit should be repeated at stated periods if the patient is not sent away to sanatorium or hospital, or the district nurse or Tuberculosis Association visitor can make these subsequent visits of inspection. When advanced, bedridden cases are found without means of proper care, and who are an evident menace to the rest of the family, they should be removed and isolated in some institution if such exists. There is urgent need everywhere of consumptive hospitals where advanced cases can be isolated and cared for. The board of health is clothed with ample power to remove a contagious case, as tuberculosis is, when in its opinion protection of others demands it.

After the death or removal of a tuberculosis case, the room occupied by him should be thoroughly cleaned and disinfected in the usual manner for contagious diseases. It is frequently difficult, if not impossible, to ascertain the fact of the removal of a consumptive, for the tenement house dweller changes his abode so often. The visitor or district nurse in his periodic visits will be very helpful in this respect. Investigation has shown that the occupancy of an infected tenement by a new family is a prolific source of disseminating the disease; and it would be safer if all landlords were compelled to clean and disinfect a tenement, as is the local requirement in some health resorts, to the satisfaction of the board of health before permission was granted to rent it to another family.

An ordinance against promiscuous spitting, promulgated by the state, city or local board of health, is now quite general, such prohibition applying to spitting in public vehicles, stations, halls and other places of public resort; sidewalks should also be included, as is done in the town of Brookline and other places, for trailing skirts and shoes can carry tubercle bacilli into the houses. In order to render such a law more effective than it now appears to be, spittoons should be liberally supplied in public places, and attention directed to them by the sign, "Spittoon. Spitting on the floor forbidden." In this climate during the colder months of the year, a large number of persons suffer from "colds" accompanied with more or less abundant secretion, and it is a hardship not to afford them proper means of getting rid of this by expectoration. Indeed, spitting may be regarded as nature's method of cleaning the mouth; at least, it is the poor man's way. Therefore, spittoons conveniently located in public places, stations, smoking cars, etc., should be liberally supplied.

The free examination of suspected sputum is now quite generally made, either by the state or city boards of health, or by both; and it is a service of unquestioned value in our efforts to control the disease. There is, however, a possible danger, in my opinion, in this apparently easy way of making a diagnosis of pulmonary tuberculosis, a danger inherent, it may be said, in all laboratory-made diagnoses. The physician may be tempted to rest his case entirely upon the findings of the microscope to the neglect of a careful clinical examination. In many, perhaps most, cases of early pulmonary tuberculosis, tubercle bacilli are not present in the sputum, at least in one examination, and yet tuberculosis exists, only the process is in what we may call the "shut" stage in contradistinction to the "open" one when disintegrated tubercular tissue communicates with the bronchial tubes. If the physician, after taking into consideration the sum total of the symptoms and physical signs, is reasonably certain that the case is one of tuberculosis, he should so regard, treat and report it, whether or not tubercle bacilli are found in the sputum. If the bacilli are present, the diagnosis is, of course, without a doubt — the laboratory has made it; if they are absent, however, tuberculosis may exist just the same, and in this case the responsibility rests upon the physician to detect it. It cannot be urged too forcibly upon the medical public that one of the most important means of controlling tuberculosis is its early diagnosis of which so much has of late been said. A case discovered early and submitted to timely treatment and arrested, means at least one less dangerous advanced case, and how many others may be infected by it who can say?

The municipality can, then, in these five distinct lines of endeavor exert itself in controlling tuberculosis, viz.: (*a*) by requiring notification and inspection of the cases and their habitat; (*b*) by disinfection; (*c*) by the isolation of dangerous cases; (*d*) by the prohibition of promiscuous spitting; and (*e*) by the free examination of sputum.

It will be noticed that I have not referred to the inspection of milk in this connection, and I have designedly made this omission, because I believe, with Koch, Theobald Smith and others, that bovine tuberculosis is different from human, and that the former is but slightly infectious to man, so that the danger of tuberculosis from milk appears to be comparatively insignificant. For other reasons, however, as well as from this slight possible danger of tuberculosis, the city should maintain a rigid milk inspection, as is now indeed required in most large cities. It is to be borne in mind that the primary province of the municipality through its board of health, or otherwise, is the safeguarding of the communal health. To *protect* its citizens from disease is the especial function of the state or city, not to *treat* disease, although the latter is incidentally accomplished in the execution of the former, in the case of infectious diseases. To remove a contagious case to a hospital for the purpose of isolation involves the treatment of such a case during the period of isolation.

Outside, then, of the legitimate work of the board of health, a large field is left for individual and associated effort, if tuberculosis is to be completely controlled and eventually eradicated. Such effort can be directed towards the relief and treatment of poor consumptives, in the enlightenment of the public as to the dangers of tuberculosis and their avoidance, and in obtaining their co-operation in the tuberculosis warfare. All social efforts directed towards the improvement of the personal and environmental hygiene of the people, and all efforts towards improving the health of the masses indirectly, though very positively, tend toward the diminution of tuberculosis.

Associations for the relief and control of tuberculosis, both state and local, are rapidly springing up in this country, and are accomplishing much good in various directions; they enlighten the people upon the dangers and prevention of tuberculosis, by means of literature, lectures and tuberculosis exhibitions; they visit the consumptives among the working people and the poor, and teach them proper consumptive hygiene; supply them with pocket spit cups or paper napkins, and furnish proper nourishment in needy cases; obtain entrance into sanatoria or residence in the country for others, and follow up those discharged from the sanatorium and procure for them wholesome employment. Furthermore, such associations, by co-operating with the boards of health, can be mutually helpful.

Another valuable aid in the control and relief of tuberculosis is that of the day sanatorium carried on during the warmer months of the year, the first one of which in this country was established the past summer in Boston under the management and initiation of the Boston Association for the Relief and Control of Tuberculosis. This scheme had its origin in Berlin in 1899, and has been adopted in other German cities, and,

to a limited extent, elsewhere in Europe. An open and preferably shaded tract of land is selected within easy access of the crowded centers of population — in the Boston experiment an orchard, at the summit of Parker Hill in Roxbury, within two miles of the State House was obtained through the courtesy of the trustees of the Robert Brigham Hospital Fund. Rude temporary buildings or tents are erected at small expense to serve as kitchen, dining-room, and for shelter in case of rain. The patients come at an early hour in the forenoon after taking breakfast at home, and are given lunches and dinner prepared on the ground. They spend the day outdoors, principally at rest under the trees, and are under the supervision of a physician and nurse. In the evening they return to their homes for the night to repeat the experiment the next day. The results in the Boston camp, which is just coming to a close, have been highly satisfactory not only in the general improvement of the patients, but in the lessons inculcated of the advantages of open-air life, rest, good food and in the proper care of the sputum. Such a day camp or sanatorium for consumptives among the poor who cannot go away from home, from its simplicity and comparative inexpensiveness, would seem to be practicable for any city, large or small.

The tuberculosis dispensaries which have quite recently been established in many cities, are rendering valuable service in the direction of control as well as treatment and relief. The New York local board of health conducts one under its immediate supervision. The work of these institutions is not only to examine and treat the consumptive poor and provide them with sputum receptacles and sometimes with food, but through their visitor or district nurse, to visit them periodically at their homes, and show them how to care for themselves and take advantage of all the favorable conditions at their disposal, as well as how to protect their family from infection. As with the tuberculosis associations, these dispensaries can co-operate with the board of health with advantage to both.

The tuberculosis exhibition is a recent and popular method of interesting the people in the subject of tuberculosis. By means of models, charts, diagrams, photographs and other graphic representations, the facts regarding the disease, its prevalence, control, means of prevention, treatment, sanatoria, open-air life, etc., are portrayed. I may, in this connection, call attention to such an exhibition to be held in Boston the coming winter, for which the Legislature at its last session made an appropriation.

In conclusion, it is pertinent to this subject to ask if the municipal board of health or the municipality can increase its functions advantageously in its efforts to control this disease. In addition to the five different lines of activity already mentioned, I would suggest the following extensions of its work of control:

First, and by far the most important, the provision of adequate accommodations for the isolation of advanced cases which cannot be properly cared for at home.

Second, the free distribution of inexpensive spit cups or paper napkins, with printed directions or oral instructions as to the dangers of the dried sputum. This is already done by some boards of health, I believe.

Third, in cities and towns where there are factories and workshops, a medical inspection of the employees, or at least of those who have been noticed by the overseers to cough and spit; and at the same time general instruction should be given to all the employees as to the dangers of promiscuous spitting. This is already done in some places in Europe.

Fourth, tenement-house inspection with reference to overcrowding, air spaces and general hygienic conditions.

Fifth, in the medical inspection of schools, already a requirement in most of the large cities, especial attention to be given to the detection of tuberculosis among the scholars, the teacher co-operating with the medical inspector; and scholars showing any symptoms of the disease to be submitted to a careful examination.

In the smaller towns the physician himself has often to be the originator and largely the executor of methods of control, for he is generally the advising and directing power on the board of health. Although the cases of tuberculosis as of any other disease are numerically small, their proportion to the whole mortality may be as large or larger than that in the cities, as has recently been shown so graphically by Dr. Joslin in the case of the town of Oxford of this state, where the average rate of mortality from consumption was greater than that of the whole state of Massachusetts during the last half century.[1] It is incumbent, then, upon the physician of the small town to labor for the control of tuberculosis with the same eagerness and determination as he would or should exhibit if contending with a larger number of cases in a larger place. The methods which he will employ, though in general the same as everywhere in vogue, must be wisely adapted to the peculiar conditions of his town. The cases are so few comparatively, that each case can receive individual attention, and be discovered with ease.

The whole civilized world is speaking and acting with no uncertain meaning in regard to tuberculosis; it is determinedly set towards stamping out the disease. The mere recital of the anti-tuberculosis crusade would require a volume. There can be but one ultimate result of this great movement; sooner or later tuberculosis will be practically exterminated. Each of us, however, must do our part in the warfare, and the more eagerly we all respond to the call the sooner will the final consummation come, and then each of us will have added to our life expectancy or that of our children a few more years and be free from the intolerable incubus of this dreaded disease which has brooded over mankind for untold years.

[1] Joslin, Elliott P., M.D.: Consumption in a Massachusetts Town, Boston Medical and Surgical Journal, Oct. 19, 1905.

TWO CASES OF ANATOMICAL ANOMALY OF THE LARGE INTESTINE.*

BY SAMUEL ROBINSON, M.D., BOSTON,

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A REVIEW of the reported anomalies of the large bowel has convinced me that these two cases are of sufficient rarity to be of interest.

CASE I. Table IV, Female subject. Age, fifty-five years (approximately). A crucial incision with triangular flaps was made, exposing the following conditions: The entire abdominal cavity apparently was filled (Case I, Drawing A) by a large, shining, bluish-colored mass of doughy consistency which proved to be a much distended lower bowel in the region of the sigmoid flexure. Upon delivering this portion from the cavity it was found that the sigmoid flexure might be said to originate at the splenic flexure; that is to say, if we adhere to the definition of the sigmoid, as that portion of the large gut which has retained a free mesentery and is entirely covered by peritoneum. In other words the descending colon had not become adherent posteriorly, thus rendering a differentiation between sigmoid and descending colon impossible. From the splenic flexure to the rectum was this freely movable, much distended and elongated gut with the following dimensions:

Length from splenic flexure to rectum, 5 feet, 6 inches. Diameters of gut, 3½ to 7 inches.

12 inches from splenic flexure, 3½ inches.
2 feet " " " 4½ "
3 " " " " 6 "
4 " " " " 7 "
At beginning of rectum, diameter, 7 inches.

The mesentery of this combined sigmoid and descending colon had not become adherent posteriorly and like the mesentery of the small intestine had a defined line of attachment to the posterior abdominal wall parallel to and about two inches to the left of the attachment of the small gut. The breadths of this descending mesocolon were as follows:

2 inches from splenic flexure, 2½ inches.
6 " " " " 5 "
12 " " " " 7 "
2 feet " " " 11 "
3 " " " " 7½ "
4 " " " " 7½ "

Although this condition of things in the left abdomen, to which I find nothing similar reported, may be the greater anomaly, a not unlike disturbance of normal relations was found also on the right side. (Case I, Drawing B.)

The last five to six inches of small intestine adjoining the cecum were adherent to the posterior abdominal wall in a line from the right sacro-iliac synchondrosis to the lower border of the right lobe of the liver. (Case I, Drawing B, 6IL.)

The ileum at this portion had lost its posterior peritoneal covering and was consequently subperitoneal. Its position and peritoneal relations then corresponded roughly to those of the normal adult ascending colon.

The cecum was found resting at the upper border of the iliac fossa on the iliac crest. It could be moved upward or inward as far as the adherent last portion of ileum would permit it. The ascending colon which in proportion to its own mobility normally regulates the mobility of the cecum and appendix was, in this case, very movable. The posterior lamella of the ascending mesocolon had not become adherent to the posterior abdominal wall and the gut was accordingly as movable as the descending colon, which was, as we have seen, also without anchorage. Had it not been for the anchorage of the ileum posteriorly, the cecum, appendix and ascending colon could readily have been swung over to the left of the median line. An adhesion (Drawing B, XYZ) of about 3 inches of the ascending mesocolon to the lower border of the right lobe of the liver supplied a certain amount of anchorage to the first portion of the large intestine, although, as is shown in Drawing B, even this permitted of a marked dislocation of the cecum and appendix from its normal position.

CASE II. Female, probably under ten years. Laboratory specimen at Harvard Medical School from an old dissection. (By permission of Prof. Thomas Dwight.)

I enclose a drawing (C) of this specimen to demonstrate again a case of movable cecum. The small intestine is free as in the normal adult. The posterior surface of the mesentery of the ascending colon, however, has not become adherent to the posterior abdominal wall. The ascending gut has consequently no anchorage, and the cecum and appendix can resultingly be placed artificially in any part of the abdomen.

The descending colon and sigmoid flexure are correspondingly movable, and the mesentery of the entire intestinal tube is free, except for a common median posterior attachment like that of the primitive mesentery of the young embryo.

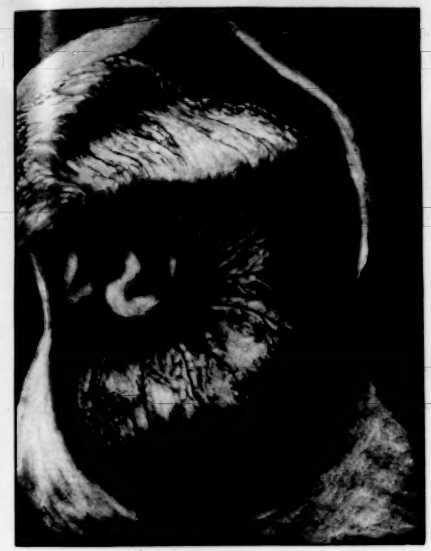
EMBRYOLOGY.

Migration. — In the embryo of about 12 mm. (Minot), there appears, to the left of the median line in the region of the umbilicus, a diverticulum in the digestive tube which is the anlage of the embryonic cecum. The appearance of this outgrowth marks also the ileal end of the large intestine, and from this time on the "caudal" end of the canal increases in diameter and forms the large intestine. The latter lengthens also, but more slowly. At the sixth week the cecal end is lifted as it were (Heisler) over the upper limits and comes to occupy the right hypochondrium; the colon meanwhile passing thence transversely across the abdomen ventral to the duodenum. The colon then appears to grow in a downward direction as a result of which the cecum assumes positions at first under the right lobe of the liver, then in front of the right kidney, and eventually, about the eighth month (Heisler), it passes the crest of the ileum. It is not until about the time of birth that the cecum has completed its migration from its position in the left umbilical region to the right iliac fossa.

Anchorage. — Either synchronous with or subsequent to the downward growth of the large intestine with the migration of the cecum and the formation of the ascending colon, a process of anchorage goes on, which, though the migration may be complete, is alone responsible for the fixation or mobility of the cecum in its newly attained territory.

In the young embyro the digestive tube has a common mesentery which extends along the gut to a median attachment to the posterior abdominal wall along the vertebral column. After the rolling and lifting from left to right of the large intestine neighboring the cecum, that portion of

* Publication of the Department of Anatomy of the Harvard Medical School.



CASE I, A. — Omentum has been reflected upward to expose a much distended descending colon and sigmoid flexure which occupies almost the entire anterior aspect of the abdominal cavity.



CASE I, B. — Showing extreme mobility of cecum, appendix and ascending colon; mesenteric adhesions to the liver (XYZ); and the attachment of the last six inches of ileum to the posterior abdominal wall, 611.



CASE II. — Showing free mobility of appendix, cecum, ascending colon and ascending mesocolon. The descending colon may be lifted in a similar manner.

this embryonic mesentery attached to the large bowel is given different names according to the direction of that portion of the gut supplied, viz.: Ascending mesocolon, transverse mesocolon, descending mesocolon, pelvic mesocolon.

In a large proportion of adult cases (Lesshaft, Toldt), we find that the ascending mesocolon has become adherent to the posterior abdominal wall. In other words, the posterior peritoneal covering of the ascending mesocolon has become fused with the parietal peritoneum of the posterior abdominal wall, and what appears to be the peritoneal covering of the posterior wall on the right side is really the anterior peritoneal surface of the ascending mesocolon. And it is also true that in a large proportion of adult cases the colon itself becomes adherent posteriorly in a similar manner, losing its posterior peritoneal covering. The French anatomists designate the embryonic mesentery of the ascending colon which was originally only a part of the continuous mesentery of the digestive tube as the "mesocolon ascendant primitif." In a certain proportion of cases stated below the colon itself does not become adherent posteriorly, at least for its entire extent, and in this case, the mesocolon is usually to a greater or less length also detached and we have what Jonnesco and Charpy call the "mesocolon ascendant secondaire ou definitif."

The descending colon up to the end of the fourth embryonic month (Poirier) also possesses its original primitive mesocolon. This, like the ascending mesocolon, also gradually becomes adherent to the posterior wall up as far as the intestinal border, and then, as is more often the case, the descending colon itself becomes attached posteriorly. If the latter adhesion does not take place we have a mesocolon descendant definitif of greater or less length.

To return to our two cases cited: In the first we found five anomalous conditions. A high position of the cecum under the liver; secondary ascending and descending mesocoli of varying lengths; enteroptosis and distention of the lower bowel; and an adhesion posteriorly of the last six inches of the ileum in a manner corresponding to the usual anchorage of the ascending colon.

The developmental story of the large bowel given above must convince us that a high position of the cecum where it cannot be placed artificially in the iliac fossa without traction must indicate an arrest at some time in the downward migration of the cecum to its normal destination. Mobility of the cecum, on the other hand, when the cecum may lie in the fossa, but can be placed elsewhere, indicates a greater or less deficiency in the complete adhesion of the ascending mesocolon to the posterior abdominal wall, in other words, a greater or less persistency of the free primitive mesentery. In our first case we have a combination of these conditions. The cecum cannot be brought down to the fossa and yet it has a mesocolon which has become attached posteriorly only at its junction with the transverse mesocolon, thus allowing full mobility of the ascending gut which is only limited below by an adhesion posteriorly of the last six inches of the ileum, together with an equivalent portion of the original primitive mesentery of the last six inches of the small intestine.

Let us consider these conditions in turn. I have stated that high positions of the cecum are due to arrests in its migration. Berry, Faure, Vaillée, Fromont, Hartman, Jonnesco and Charpy, Legueu, Perondi, Tuffier and Jeanne are authorities for this theory. The strongest argument in favor is that a comparison of necropsy reports on children with those on adults shows a marked proportionate increase in the number of high cecal positions in the cases of children.

Vaillée reports 100 autopsies; 14 were three to nine months embryos, 77 were under one year old, 9 were between one and six years.

In one fifth only of these cases was the cecum found in its descended iliac position. One case, over right kidney; one near umbilicus; one to left of median line.

In comparison with these studies should be noted observations by Tuffier and Jeanne on 134 cadavers, of which 9 only were under forty years; nearly all between fifty and eighty. About seven eighths of these (113) were in the normal low position as contrasted to one fifth in those of Vaillée. One case only was found in the region of the umbilicus.

Legueu in 100 autopsies in children of all ages found 31 cases of cecа with positions high in the iliac fossa, under the liver or in front of the kidney.

This frequency in young subjects then would lead us to conclude that high positions signify a delayed or arrested migration downward.

The mobility of the cecum or the persistence of a free ascending mesocolon has also been found more frequently in young subjects, again indicating either an incomplete or arrested adhesive process which in the adult has resulted in the gluing down of the free mesocolon.

Lesshaft and Toldt state that in adults the ascending colon is itself adherent posteriorly in the great majority of cases.

Treves has found an ascending mesocolon in 26% of cases, although this includes cases where there is even half an inch of free mesocolon.

Fromont reports the persistence in 30% of adults.

In children, however, Luschka claims that the ascending colon is completely free and movable and covered by peritoneum in most cases of the new born.

Toldt states that in the new born the ascending colon is usually adherent posteriorly except at its beginning when the mesocolon persists and the cecum is freely movable.

Legueu states that of children between one and fifteen months, 40% have a free colon and a mesocolon of greater or less length, and that 50% have at least free mobility at its lower half, and that only 5% were adherent posteriorly as in the adult.

Other investigators report large numbers of autopsies to show the varying positions of the

cecum and appendix, but from their figures no conclusions can be drawn as to whether many of the cæca found in a low normal iliac position had retained mesenteries and could be dislocated; nor can we determine whether cases of high or left-side position were due to a lack of migration or due to displaced cæca with long secondary mesocoli.

Monks and Blake in 656 autopsies mention an appendix "close to gall bladder," another up to right border of the liver, another between right lobe of liver and right kidney, and still another beyond the median line. These anomalies must have been due to either one or both of the conditions which were present in Case I, incomplete migration or free mesocolon.

In Engel's 100 necropsies, 4 appendices are reported to have an "umbilical position."

Lafforgue in 100 cases found all in iliac or pelvic positions and none above.

Perondi reports his 50 cases of post-mortem examination of the cecum, 3 with umbilical position and 1 in the lumbar fossa.

The anomalous adhesion of the last six inches of ileum with its mesentery is more difficult of explanation. I find three other such cases reported. One by Hartmann, another by Merigot de Treigny, another by T. L. Faure. In two of these cases the cecum, as in the case we present, is high up under the liver. Merigot de Treigny contrasts his case with that of Faure in saying that the ileum was subperitoneal while the cecum was much lower down than usual and in contact with the crural arch. It is more easy to conceive the latter than the former condition. If the posterior adhesive process of the ascending mesocolon should be exaggerated rather than defficient we should expect to find it continued on to the last of the ileum and its mesentery. But when the cecum and ascending colon have retained enough mesentery to allow a subhepatic position we should at least expect the lower end of the ileum to remain free in its mobility.

The position of the cecum and appendix have been of such clinical interest that much has been written on the subject. Anomalies in the descending colon, however, are not only of less frequency, but of less clinical value, and I find much less authority to explain the conditions which we find present in this region of Case I. We recall that a descending mesocolon persists in this specimen of varying length from 2½ to 7½ in. and that the descending colon was entirely covered by peritoneum and not adherent posteriorly; in other words, not extraperitoneal as in the normal adult. Jonnesco claims that 15% of all cases of descending coli retain a free mesocolon of greater or less length but it is evidently very rarely (in fact I find no other case reported) that the whole large gut from spleen to rectum is freely movable. We cannot say that the embryonic condition remains, for the original primitive mesentery has become adherent to the posterior wall for a short distance so that the apparent origin of this secondary descending mesocolon is on a line from the spleen across the left kidney to the left sacro-iliac synchondrosis parallel to the attachment of the free small intestine mesentery, making a long trough-like sulcus between these two mesenteries with the adherent portion of the original descending mesocolon as the floor of the fossa. Of course we find here the sigmoidal mesocolon continuous with that of the descending colon, and since both the descending and pelvic guts are free no distinction can properly be made between the two.

To explain the great distention of this combined descending and pelvic bowel I cannot supply authoritative reasons. Theorizing, however, we must admit that this freely movable gut with a long free mesentery is like the ascending coli of like mobility, a result of incomplete embryonic anchorage which normally occurs about the fourth month.

Unlike the ascending colon the descending and sigmoid are normally filled with a fecal residue of greater weight and firmer consistency. Granting, as our embryological study and statistics would lead us to do, that this mobility was a congenital condition in the subject described, it is conceivable that constant weight of fecal material must gradually have led to enteroptosis of this freely movable gut, until long retained fecal matter gradually distended the lower gut to the enormous diameters which we have related above.

Clinically, it is of interest to imagine the difficulties which would have been confronted in an operation on this individual for appendicitis. The usual incision would first have revealed a much distended gut. Traction for several inches in any direction would have yielded more of the same large pelvic portion of the descending gut. Further grappling through the opening would have delivered a piece of small intestine which on being followed up distally in the usual way, would have led, not to the cecum, but to an abrupt termination at the bottom of the wound against the posterior abdominal wall, viz., at that point where the last portion of the ileum becomes retroperitoneal. It is a question whether the cecum could have been seized directly and brought into the wound without an enlargement of the usual incision.

The following bibliography includes some references which, though having little bearing on the above anomalies, may be of assistance in further review of the literature of the intestinal tract.

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It is reported that Dr. Osler, who is now in this country, will spend a month in Baltimore, the first of the year, and will hold certain exercises at the Johns Hopkins Hospital.

Clinical Department.

ON THE USE OF AUTOMOBILE SPARK COILS AND DRY CELLS FOR EXCITING VACUUM TUBES FOR TREATING SKIN DISEASES.

BY WILLIAM ROLLINS, M.D., BOSTON.

In previous papers it was shown vacuum tubes for the treatment of skin diseases could be efficiently excited by apparatus costing but a small fraction of the expense of that in use, provided certain principles, which were stated, were employed in the design and use of the vacuum tubes.

In the present note attention is called to a still less expensive apparatus made for a patient who lived where no commercial electric circuit was available. It consisted of the spark-coil of a motor car, costing eight dollars, and of two cells of dry battery, costing forty cents. This apparatus makes the home treatment of some skin diseases by radiations, under the direction of a physician, both practical and inexpensive; while usually such treatment is very expensive on account of the large number of visits the patient must make to a radiation specialist and the time required for each application.

REPORT OF A CASE OF PARATYPHOID FEVER.

BY ARTHUR D. DRAPER, M.D., BOSTON.

Through the courtesy of Dr. J. W. Bartol, to whose service at the Boston City Hospital this patient was admitted, I am glad to report the following case of paratyphoid fever which presents some interesting features:

E. G., twenty-two years old; married; born in Sweden; polisher in piano-factory. Former history and present history unimportant; no history of previous attack of typhoid or rheumatism. Present illness: For two weeks previous to entrance to hospital had complained of heavy feeling in head and backache. One attack of epistaxis started by picking nose. Has had no nausea, vomiting, chill or fever. Three days before admission, the left ankle became swollen and painful; pain increased on active motion. The right ankle is similarly affected, but to a less degree. Appetite poor; bowels costive. Denies venereal and alcohol. Complains now only of pain in ankles. Was admitted July 27, 1905.

Physical examination. — Well developed and nourished. Very slight prostration. No apathy. General condition good. Temperature 104°, pulse 74.

Eyes. — Pupils, motions and reactions normal.

Tongue. — Thin white coat.

Throat. — Normal.

Neck. — Not rigid or retracted.

Heart. — Area of dullness 4 cm. to right, 10 cm. to left of median line, action tumultuous, slight galloping rhythm. Rough systolic murmur confined to apex. Impulse visible and palpable in fifth interspace. Pulmonic second sound slightly louder than aortic.

Pulses. — Equal, regular, rapid, good volume and tension.

Lungs. — Show no modification of resonance or respiratory sounds.

Abdomen. — Not tender; normal tympany. Liver not enlarged. Spleen not felt.

Extremities. — Knee jerks normal. No edema.

Left ankle slightly swollen, red and tender; painful on motion. Right ankle very slightly swollen and painful.

Urine. — Color normal. Specific gravity, 1,022. Albumin, Sl. poss. trace. Sediment, rare abnormal blood cell.

Widal, negative, 1-100. Leucocytes, 7,200.

Under sodium salicylate, sodium bicarbonate and potassium acetate, the pain, swelling and redness of the joints grew much less and on July 31 had entirely disappeared. Patient feels perfectly well. No apathy or prostration. Cardiac condition much improved; no murmur heard. Temperature became about normal four days after admission and there remained until Aug. 10 when it rose to 104° in eighteen hours and remained at about this height until Aug. 24, when it again fell to normal by lysis. Patient seemed very comfortable until the afternoon when the fever started when he complained of slight headache and of feeling hot. Pulse which had been at about 75 rose to 110 at this onset and there remained until temperature fell.

Sept. 7, patient had a recrudescence which lasted six days after which temperature remained about normal until discharge.

From Aug. 15 to Aug. 18 patient was delirious afternoons, but at no time did he complain of any discomfort.

Aug. 18, spleen palpable. Patient mildly delirious.

Aug. 25, patient shows quite pronounced anemia and considerable prostration and emaciation.

Sept. 5. Since last note patient has been gaining steadily in weight and strength and sat up to-day in bed for the first time.

From this time until discharge, convalescence was uneventful and he was discharged well seventy days after admission.

Aug. 3. Widal negative, 1-100.

Aug. 7. Paratyphoid α and β positive, 1-100. Leucocytes, 6,800.

Aug. 9. Paratyphoid α positive, 1-100; β negative, 1-100. Widal negative, 1-100.

Aug. 16. Paratyphoid α and β positive, 1-100. Widal negative, 1-100.

Aug. 24. Paratyphoid β positive, 1-150 and 1-200 Blood culture negative. Paratyphoid β organism recovered from stools and urine.

The case presents the following interesting features: Its onset was masked by an attack of acute articular rheumatism, starting during the incubation period of the paratyphoid, the latter disease not becoming apparent for two weeks following the patient's admission and four weeks from first subjective symptom. The very acute rise in temperature (without chill) of 5.4° in eighteen hours. The Widal was persistently negative. The paratyphoid bacillus α was positive throughout the disease. The β paratyphoid bacillus was recovered from the urine and stools, but not from the blood. The course was considerably longer than the average typhoid case of this year, and, lastly, throughout the disease, the patient showed practically no apathy.

IN his annual report of the Pasteur department of the Baltimore City Hospital, Dr. Nathaniel G. Keirle, director, claims that there has been but one death out of the 775 cases. Three other patients died, but before they had received the full treatment. — *Journ. Am. Med. Ass'n.*

Medical Progress.

REPORT ON PEDIATRICS.

BY THOMAS MORGAN ROTCH, M.D.,
AND
JOHN LOVETT MORSE, M.D.

SURGICAL INTERVENTION FOR THE INTRACRANIAL HEMORRHAGES OF THE NEW-BORN.[1]

INTRACRANIAL hemorrhage is usually of venous origin and follows the rupture of some of the delicate and poorly supported venous radicles of the cerebral cortex. The vessels most likely to rupture are those which ascend over the cortex and enter the longitudinal sinus from the mid-cerebral region, as they apparently cross the subdural space to enter the dura at the outer edge of the sinus without any support. During parturition there is presumably always some overlapping of the parietal bones owing to the lateral compression of the skull which is necessarily accentuated by the lateral application of forceps. Any undue overlapping may readily tear one or more of the lateral cerebral veins away from the sinus. This is probably the most common form of injury and explains the fact that the primary effusion is commonly median and in consequence implicates primarily and most seriously the centers for the lower extremities. The rupture of the vessels may take place only on one side, and Cushing is of the opinion that the extravasation is usually limited to one side of the falx, although, of course, bilateral lesions are common. Fractures, particularly basal ones, may also be followed by serious hemorrhage. In these cases the basal ganglia are usually primarily affected.

He notes that there is a remarkable absence of any description of the early symptomatology of these lesions, the consequences alone being described. He thinks, from the patients which he has seen, that the condition need not be difficult of diagnosis. First and foremost among the objective signs is the bulging and tense anterior fontanelle; convulsions are frequent, also undue reflex activity; ocular palsy or difference in the size of the pupils is not uncommon. In severe cases there may be symptoms referable to the medulla, such as alterations from the normal in the cardiac or respiratory rhythms. Evidences of paralysis are rare in the early days. There may be no demonstrable difference in the muscular tone of the two sides even when the hemorrhage is confined to one hemisphere. In doubtful cases lumbar puncture may render the diagnosis possible, for when there has been any effusion of blood into the subdural spaces free corpuscles are soon after found in the fluid of the lumbar meninges. Apparent restoration to health may follow after the first few days and the late manifestations of the disease not appear until after some months, then going on to spastic paralysis, blindness, deafness, feeble-mindedness and epilepsy.

[1] Harvey Cushing: The American Journal of the Medical Sciences, 1905, Vol. CXXX, p. 563.

Cushing operated on four very well marked cases. One died eight hours after an apparently successful operation, another during the operation. The third child was perfectly well when one year old, stood, took a few steps and said a few words. The fourth case, the most serious one, recovered from the operation and at the time of writing, about six months later, was doing well except that one eye was blind. It showed no evidences of motor disability, but the ultimate results of the operation cannot be told until some years have elapsed. The operation consists briefly in raising practically the whole parietal bone as a flap and cleaning out the clots.

He thinks that his cases show certain points. One is that a new-born child will stand a cranial operation well; that the operation should be done as early as possible, and that too much should not be attempted at one sitting. The coagulation time is probably as rapid in infants as in adults and hence no danger is to be feared from a slow coagulation time. At any rate, the effused blood in all these cases was clotted.

He notes that in two cases the symptoms pointing to intracranial trouble did not appear or were not recognized until several days after birth. It is probable that a more careful study of the symptomatology will enable us to recognize these conditions earlier.

He concludes that it can be demonstrated that a craniotomy on the new-born child, when conducted with due precaution and delicacy of manipulation, is comparatively free from danger — as two of his cases seem to show, and that the immediate risk of death and the unfortunate late results of meningeal birth hemorrhages may be avoided in many cases by surgical interference.

VALUE OF LUMBAR PUNCTURE, WITH PARTICULAR REFERENCE TO THE DIAGNOSIS OF TUBERCULOSIS MENINGITIS.[2]

Bernstein states that in the cerebrospinal fluid drawn during life from healthy persons there is always a glucose-like reducing substance averaging from 4 to 5 cc. to 100 cc. This substance is probably pyrocatichin. Comba found this substance in small amounts at the onset of tubercular meningitis, but does not toward the end. Bernstein did not find it in any stage of forty cases of tubercular meningitis. He considers, therefore, that the absence of this reducing substance is of importance in diagnosis. He thinks, however, that cytodiagnosis is of far more importance. The general rule is that mononuclear leucocytosis goes with tubercular meningitis and polynuclear leucocytosis with purulent meningitis. He found only three exceptions in 51 fluids from cases of tubercular meningitis. He states that cryoscopy is of no value although he did no work on this point himself. He found tubercle bacilli in 38 of 40 cases of tubercular meningitis. He thinks that this large number of positive results is due to his careful technique and patience. His technique is as follows: He uses a small fibrin clot as a nidus for the sediment obtained by centrifugalization, putting the sediment on the smear and drying in a thermostat. He always found more bacteria towards the close of life. He sees no advantage in the cultivation of the fluid for inoculation of animals as no time is saved. In any case the patient is dead before any results can be expected. He suggests the possibility that a tuberculin test on the infected animal may gain time.

[2] Bernstein: New York Medical News, June 17, 1905.

A STUDY OF BRACHIAL BIRTH PALSY.[3]

They draw the following conclusions from a study of the literature and pathological conditions and from the results of their operations on seven cases:

(1) The cause of the laceration type of birth palsy is tension on the nerve trunks, which first ruptures the nerve sheath and then the nerve fibres. The prevention of this serious lesion of the cervical nerve trunks rests with the obstetrician, who should not overstretch the child's neck in the process of delivery.

(2) The persistence of the palsy is clearly explained by the pathological findings, viz.:

(*a*) Rupture of the perineural sheath with hemorrhage into its substance, resulting in the formation of hematomata or hematomatous infiltration into the neighboring tissues.

(*b*) The cicatricial contraction following organization of the blood clot and repair of the rent in the perineural sheath. The connective tissue thus formed indents and presses upon the nerve bundles, strangulating them and preventing regeneration of the nerve fibres. In some instances the same result is accomplished by the turning inward of the perineural sheath upon the nerve bundles.

(3) The nature of the lesion in all cases demands excision of the damaged areas and suture of the divided ends as soon as it is proven that spontaneous repair will not take place. The plan of treatment is then the same as that for peripheral nerve injuries elsewhere.

(4) In *all* cases such treatment as will prevent contractures and deformities and maintain muscle tone in the paralyzed limb should be systematically used until either spontaneous recovery occurs or operation is done. (Traumatic neuritis is a contra-indication to active treatment.) It is obvious that the above measures should be continued after operation.

(5) The proper time for surgical interference is not yet definitely fixed. It appears, however, to be much later than two or three months after birth, as advised in Kennedy's report. At the present time one year would seem to be a reasonable delay before operation.

(6) Sufficient time has not yet elapsed in the majority of the cases in this series for final results to have appeared.

At the end of eighteen months in two cases (II and III) the improvement in nutrition, range

[3] Clark, Taylor and Prout: The American Journal of the Medical Sciences, 1905, Vol. cxxx, p. 670.

of motion, and muscle power in the paralyzed limb have been sufficient to demonstrate the value of the operative procedure.

HYPONITROGENOUS DIET IN EPILEPSY.[4]

They gave a diet from which all animal food, even milk and eggs, was excluded. In addition they diminished the amount of nitrogenous elements contained in other food as much as possible. The vegetables used were those which contained the least nitrogen. The place of the nitrogenous elements was taken by carbohydrates, especially sugar and fats. The food was salted as usual and the patients took the usual dose of bromide of potassium. They drank, as before the experiment, water slightly colored with red wine. Their occupation was the same. The only factor modified was the quality and quantity of nitrogen ingested. The experiment was carried out on ten female children, eight of whom were epileptic, aged between ten and seventeen years, and two of whom were simply backward, aged nine years, and taken for comparison.

This régime was kept up for a month. The urinary elimination was estimated by daily analysis of the urine of one epileptic and the two backward children. They were all weighed every ten days in order to determine how this modification of the diet was borne, and finally the number of epileptic attacks during the régime was compared with that in the periods preceding and following.

They conclude from their study that a régime very low in nitrogen can be borne by children for a month without any disturbance of the general nutrition, and even with increase in weight, even when the amount of nitrogenous elements is dropped to .45 per kilogram; and that neither the quality of the nitrogenous elements nor the quantity of nitrogen ingested influences in any way the number or intensity of the epileptic attacks.

LESIONS OF THE INTRACARDIAC, INTRAGASTRIC AND INTRA-INTESTINAL GANGLIONS PRODUCED BY ACUTE AND CHRONIC INFECTION AND INTOXICATION BY THE COLON BACILLUS.[5]

In order to explain sudden death from cardiac collapse in the course of infantile gastro-enteritis, Iovane studied the lesions of the intracardiac, gastric and intestinal ganglia produced experimentally by the subcutaneous injection of cultures or toxins of the colon bacillus obtained from the feces of infants suffering from severe gastro-enteritis. His experiments were carried out on eight rabbits which were killed at various intervals. In acute infection or intoxication the lesions were very slight, merely a rather more diffuse staining of the cell with some alterations in shape. In chronic infection and intoxication (one of his experiments lasted more than eight months) more or less marked lesions were found, varying from enlargement of the cell with chromophilia to the formation of vacuoles in the protoplasm, marked lesions of the nucleus or even atrophy of the cell. There can be no doubt that such cellular changes ought to be accompanied by disturbances of function more or less easy to discover clinically, but probably very marked in chronic cases. The author remarks that these lesions ought to be even more intense in the child than in the adult because of the incomplete development of its nervous system.

[4] Jules Voisin, Roger Voisin and Norero: Rev. Mensuelle des Maladies de l'Enfance, 1905, Vol. xxiii, p. 252.
[5] Iovane: Pediatria, 1904, xii, p. 713. Abstract in Annales de Médecine et Chirurgie Infantiles, 1905, Vol. ix, p. 464.

INTUSSUSCEPTION IN INFANCY AND CHILDHOOD.[6]

Hess, besides reporting 3 cases of his own, has been over the literature for the last ten years. He collected 1,028 cases, 314 of these were reported in sufficient detail to allow analysis. No causative factor was made out in 272. Eight of the cases occurred in the first three months; 75, or 23%, in the second three months and 118, or 37%, in the second six months, making a total of 60% between three months and the end of the first year. He concludes that abdominal pain is the first symptom of acute invagination. Vomiting was present in 166 of 170 cases in which the presence or absence of this symptom was noticed. Hemorrhagic evacuations were present in 156, and absent in only 4 cases of 160 with accurate data. Prostration, sudden in development and out of proportion to the other symptoms, was common. A tumor was present in 183 cases and absent in only 14 cases in which this point was noted. Rectal tumor was present in 35 of these cases and absent in 38. In 11 there was no abdominal but a rectal tumor. Meteorism is usually late in developing and its absence is of diagnostic import. Tenesmus is much more frequently present than is meteorism. Fever was present in about 40% of the cases in which it was noted. Two hundred and eleven cases recovered, 103 died. Forty-three per cent of the cases treated without operation died, while 30% of operative cases following several attempts at irrigation died and only 8% of the cases following a single or no attempt at irrigation died, showing that the earliest operation with the least manipulation gave by far the best results. Twenty-one of 38 resections died and 17 recovered. An artificial anus was made in 9 cases with 4 recoveries.

THE PATHOLOGY AND TREATMENT OF INFANTILE DIARRHEA.[7]

In the cases which he studied, occurring in infants a few months old, he found that B. perfringens, which exercised a strong proteolytic and fermentative action, was the principal organism, and that B. bifidus, which is normally present, had disappeared. The object of Tissier's treatment was to transform the bacterial flora of the intestine instead of attempting to render the tract aseptic. He concluded from his study of B. perfringens, the growth of which is stopped by strongly acid mediums, that the indications for treatment were two: First, to limit the ingestion of proteids as much as possible, and, second, to

[6] Hess: Archives of Pediatrics, 1905, vol. xxii, p. 654.
[7] Tissier: Annals de l'Institut Pasteur, May 25, 1905.

administer cultures of an organism furnishing mixed peptolytic ferments and capable of producing more acid than B. perfringens. This organism, moreover, must be nonpathogenic and must not produce gas or irritating substances of any sort. It should preferably be anaërobic. He chose B. acidiparalactici as best answering these requirements. His treatment was as follows: He first modified the diet, stopping cows' milk and giving starches, sugar or other carbohydrates, adding after a few days breast milk or peptonized milk. He also gave before each feeding 16 cc. of sterilized 10% lactose solution. In addition he gave daily 4 to 8 cc. of a pure culture of B. acidiparalactici which had been kept for five or six days at a temperature of 67° C.

He reports six cases in detail. In these treatment was soon followed by improvement in the symptoms and diminution and disappearance of the abnormal bacillus with the reappearance of B. bifidus. In one case mentioned by Tissier the patient was improving under this treatment when the parents insisted on giving calomel. Soon afterwards B. perfringens increased rapidly and B. bifidus diminished correspondingly.

THE INFLUENCE OF UROTROPIN ON THE INCIDENCE OF INFLAMMATION OF THE KIDNEYS IN SCARLET FEVER.[8]

Preisich gave urotropin in doses varying from .05 gm. to .5 gm. to 600 cases of scarlet fever with the object of the prevention of nephritis, and compared the results in these cases with those observed in 600 other cases similarly treated except that they did not receive the drug. Thirteen and six tenths per cent of the cases which did not receive urotropin developed nephritis, while nephritis occurred in only 9.16% of those which received the drug. The course of the nephritis was more favorable in the cases which had received the urotropin than in those which did not. He believes that under favorable circumstances urotropin is capable of reducing the occurrence of nephritis in scarlet fever by 56%.

EXTREME LOSS OF WEIGHT IN THE FIRST TWO YEARS OF LIFE.[9]

Quest looked over the material of the Breslau Children's Clinic to determine how great the loss of weight may be in an infant, and what is the greatest loss compatible with life.

He found within ten years 38 cases with a loss of more than one fourth of the body weight. The maximum in the fatal cases was 38.9%; in those which recovered, 34.8% of the body weight. Seventy-nine per cent of the cases occurred in the first half-year and 21% in the following one and one-half years.

He arrived at the following conclusions: Extreme loss of weight in infants is most frequent in chronic disturbances of nutrition and tuberculosis. The greatest loss of weight which is compatible with the preservation of life is 34% of the body weight. Recovery in such cases can usually be attained only by breast feeding. At any rate, recovery is much more likely with breast than with artificial feeding.

[8] Preisich: Therapie der Gegewart, 1905, Vol. xlvi, No. 5.
[9] Quest: Monatsch. f. Kinderheilkunde, 1905, January. Abstract in Archiv. f. Kinderheilkunde, 1905, Vol. xli, p. 205.

Reports of Societies.

AMERICAN ORTHOPEDIC ASSOCIATION.

NINETEENTH ANNUAL MEETING, HELD IN BOSTON, JUNE 6, 7 AND 8, 1905.

THE Association met at the Medical Library, 8 Fenway, and was promptly called to order at 9 o'clock, Tuesday, June 6, by the president, Dr. E. G. BRACKETT of Boston.

Dr. Brackett in his presidential address spoke of the extension of orthopedic surgery in its application to a constantly increasing number of conditions, and especially in its application to what had been termed adult orthopedics, which had become of so much importance that the Association had at that meeting set aside a considerable part of the program to the consideration of that subject. This extension, he thought, was the result of legitimate growth and not the result of encroachment upon other fields of work. Great advances had been made in orthopedic pathology and etiology, especially in so-called rheumatic conditions. Advances were also being made in mechanical treatment, and the importance of after treatment in operations and the value of out-of-door treatment were mentioned.

Following the address of the president the regular scientific program was taken up, the first papers presented being four in number, dealing with tuberculous bones and joints.

SURGICAL TREATMENT OF TUBERCULOUS BONE LESIONS.

DR. CHARLES F. PAINTER of Boston first pointed out that notwithstanding the great amount of literature on the subject, it was difficult to formulate data therefrom which could be applied to an individual case. Aspiration was, he thought, a procedure not resorted to sufficiently often in children, although its value can be demonstrated to be as great as in adults. Extirpation of tuberculous bone disease is impossible in most of the cases, since it is generally impossible to remove all the foci. In children the management of the cases consists principally in the care of abscess formation. The closed method was considered preferable, although less imperative than in adults. Children tolerate apparatus and mechanical treatment infinitely better than adults.

In the operative treatment we have to consider erasions, whole or in part, excision, amputation and manipulation. Conservative methods should be adopted within certain limits. Joints which have suffered from tuberculous infection in childhood, relapsing in adult life, yield the best results if ankylosis can be secured in good position. If motion is present together with deformity, deformity should be corrected provided there are as many as 25° of motion. If there is less motion than this, deformity should be corrected and ankylosis secured. If deformity be present with ankylosis, ankylosis should be left alone and deformity overcome. If less motion than 25° with deformity, secure ankylosis. Manipulations directed toward the correction of deformities following tuberculous joint disease during the acute stage must be performed with great rarity.

THE EARLY OPERATIVE TREATMENT OF TUBERCULAR OSTEITIS OF THE KNEE (Second Paper).

DR. BERNARD BARTOW of Buffalo reported two cases of tubercular disease of the inner condyle with the end results in each case, corroborative of the value of a method of treatment which he advocated, by means of extracapsular focal excision. The advantages of this method as a radical procedure prior to infection of the knee joint were dwelt upon. One case had been under observation for six months and the other for one year, each showing a good result. This plan of treatment was advocated because of the shorter time required, the relatively large preservation of motion, the simplicity of the post-operative cure, and the removal of the menace of reawakened activity which lies in an encapsulated focus. This method was considered preferable to conservative methods because practically devoid of risk, and the avoidance of liability to infection of the knee joint.

THE X-RAY AS AN AUXILIARY TREATMENT IN BONE TUBERCULOSIS.

DR. F. E. PECKHAM of Providence reported five cases of bone tuberculosis treated by exposure to the x-ray. In each of the cases suppuration had occurred and every means of treatment faithfully tried without good result. As a result of x-ray treatment, four of the cases showed marked improvement from the first and continued to improve uninterruptedly. One case showed only slight improvement and treatment was discontinued. Two of the cases were thought to have been saved from amputation, one of a leg, the other of an arm. All the cases were regarded as "desperate," and only in one case was there failure. In view of its proved value in these cases as well as others, the author considered that the x-ray may be of the greatest assistance in many cases, even when the tubercular process proves intractable to other methods.

LIMITATIONS OF ERASION IN COXALGIA.

DR. R. TUNSTALL TAYLOR of Baltimore, in continued consideration of two previous papers on the same subject, outlined what was termed the combined method of treating hip disease. First was pointed out the value of the x-ray as a means *facile princeps* in making a diagnosis and indicating the treatment to be adopted in conjunction with characteristic symptoms, and, second, the necessity for using in the after-treatment such mechanical measures as are required and as thoroughly as if erasion or attempted extirpation had not been attempted. Cases of coxalgia were divided into three groups and treatment indicated as follows: (1) Beginning cases with a small focus within the bone and not encroaching upon the joint, such cases to be treated by conservative methods of rest, fixation and traction in the hope that nature will arrest the disease. In such cases x-ray examinations should be made frequently to determine whether or not the treatment is adequate and extension checked. (2) If extension is found, erasion must be performed if the acute symptoms persist. (3) If there be extensive sinuses secondarily infected, with bad condition of the patient and extensive joint destruction as shown by the skiagraph, nothing is to be gained by erasion or excision. The best plan is to lay the sinuses open and overcome secondary infection, leaving the primary trouble to conservative methods. The middle class of cases only are suitable to erasion. Erasion is of unquestionable value in properly selected cases, but is unwarranted where steady improvement is obtained by conservative treatment. In the experience of the author erasion had yielded the best results in function and length if operated upon within twelve to eighteen months of the onset. With the disappearance of the other symptoms, a secondary cold abscess in the soft parts is no indication for extensive erasion of bone.

DISCUSSION.

DR. JOHN RIDLON of Chicago reported a case of tuberculous bone disease occurring in a man aged thirty, in whom the disease had begun at the age of ten. At that time the disease was treated for five years, and for fifteen years he had been without treatment or symptoms. X-ray examination showed a tuberculous bone involvement just above the rim of the acetabulum, within which was a piece of carious bone nearly one inch in diameter. There was no deformity and function was good. This condition, which had gone on for fifteen years without trouble, was cited as an example of what may be expected of conservative methods of treatment.

DR. B. E. MCKENZIE of Toronto said that he had obtained uniformly good results in tuberculous conditions of the tarsus and ankle with mechanical treatment. In such conditions he regarded the prognosis as good, contrary to generally accepted statements. The treatment comprised the use of the Thomas splint, a brace to hold the foot at right angles to the leg, and the use of iodoform, which latter remedy was thought to be of decided value. Practically the same principles of treatment were applied to the other joints of the body in the early stages. It had never been found necessary to do an excision below the age of fourteen. In adults excision had been done comparatively frequently when the disease was of long standing and causing considerable destruction of tissue. Results were good in knee cases, and less satisfactory in hip cases. In the future, amputation in severe hip cases would be more often thought of. Where the surgeon has had control of the case from the beginning, deformity should be very exceptional.

DR. L. A. WEIGEL of Rochester, N. Y., said that as far as operative treatment of tuberculous foci was concerned, he had not seen any immediate or permanent remote good results follow its use and was not an advocate of the procedure except in exceptional cases. Many cases that on clinical inspection seem admirably adapted to such operative procedure, on incision are found to be so extensive as to make complete removal of all the foci impossible. After operative treatment of a case, it is not possible to say that all foci have been removed. He wished, too, to urge a word of caution in regard to the use of the x-ray. Nothing in the way of a favorable influence had ever been demonstrated in these conditions and he thought it unjustifiable to subject those already debilitated to the influence of a dangerous agent, uncertain in results and profound in its action. He thought it better to adopt conservative methods of treatment. As to the operative treatment shortening the time, it did not seem as though a child's time should be weighed against methods of proved value as opposed to a doubtful procedure.

DR. HENRY LING TAYLOR of New York called attention to the uncertainty attendant upon a correct interpretation of x-ray negatives and the likelihood of error in relying exclusively upon such evidence in deciding the question of operation. He mentioned one case that he had seen where the skiagram showed a condition favorable to operation by excision. This was attempted and the bone found to be honey-combed with the disease, making removal of all the foci impossible, with an attending bad result. The x-ray findings should be considered of value only when confirmed by clinical evidence. The early removal of

foci might effect a cure in some cases, but the numbers suitable to such treatment must be very small.

Dr. G. G. Davis of Philadelphia said that his experience was such as to cause him to favor conservative methods. The difficulty of locating the focus in such conditions was great; frequently there was much mutilation to the structures in the attempt to find the focus, and operation did not obviate the necessity for prolonged after-treatment. In the treatment of mild cases where erasion might seem to be indicated, and even in more advanced cases with attendant suppuration, conservative methods had in his hands effected a cure. Many of the cures assigned to operative interference were due to the conservative principles carried out in the after treatment. He treated cases with severe acute symptoms by trephining the bone in five to eight places with a ¼-inch trephine. This procedure afforded drainage and relieved the acute symptoms, but did not effect a cure. In some cases the procedure had been repeated for a recurrence of the acute symptoms. In prolonged cases with sinus formation, it seemed best to open the sinus down to the bone, curette and make use of iodoform. Dr. Barlow's operation seemed an ideal one in those cases where an accurate diagnosis of the condition was possible.

Dr. H. P. H. Galloway of Toronto spoke of two cases similar to those reported by Dr. Barlow, where equally good results had been obtained by the use of conservative methods. He believed that in the future in dealing with such conditions, operative interference would be resorted to less and less.

Dr. J. E. Goldthwait of Boston said that the preceding series of papers, as well as recent writings, showed that there was no didactic treatment for tuberculous bone and joint disease and that we are coming more and more to study the pathology and place the treatment upon the pathology of the condition. Tuberculosis in bones and joints represents an infection, and, as in other infectious diseases, may be mild or severe and of slight or extensive involvement. Our function should be to save life with as little mutilation as possible in a given case. Mild cases need not be subjected to prolonged operation. In some cases radical operations are necessary. The operation selected will depend upon the extent of the disease and the symptoms presented. Amputation is necessary in some cases. Definite principles of treatment underlie any given case and such principles of treatment are to be reached by arriving at a more correct understanding of the pathology.

Dr. E. H. Bradford of Boston agreed with what Dr. Goldthwait said and further remarked that American surgeons who had made great advances in the study and treatment of these conditions had for some years been passing through a period of inquiry and investigation. He believed that now was the period for passing critical judgment on what had been done. A part of the subject had been pretty well threshed out. He referred to the splendid results obtained by C. F. Taylor who had based his treatment, not upon the pathology, but upon an experience that had demonstrated that, in hip cases, for instance, the bruising damage and destruction of the joint were to be prevented by pulling the head away from the acetabulum. He further said that he did not believe in attempted excision in nearly all cases for reasons already given, and asked how it would be possible in a hip case to excise diseased areas in the acetabulum, and if this was not done, how could it be spoken of as excision.

Dr. Painter, Dr. Barlow, Dr. Peckham and Dr. R. F. Taylor closed the discussion.

THE PRACTICAL IMPORTANCE OF CORRECT FOOT POSTURES.

Dr. Henry Ling Taylor, in a paper of the above title, said that the support of body weight is the master function of the foot. When acting as a support, it is of vital importance that the foot posture should be such as to furnish stability and good control of movements and avoid overstrain. The direction of the foot should usually coincide with the direction in which the body tends to fall, which is forward as a rûle, and under ordinary conditions. Weight should be frequently shifted from one side to the other in order to avoid undue strain. Typical walking should be with forward directed feet and typical standing with the weight over the straight forward foot. Conventional military and gymnastic posture of attention, with everted feet, are unsuited to prolonged standing or as a norm in gymnastic or military exercises. It has a malign influence on the general posture because of the improper distortion of parts above. The straight foot is naturally used by children, primitive people, mountaineers, guides and strong, enduring walkers and runners. Out-toeing is typical of the weak and broken-down foot, and is stiff, awkward and fatiguing. A slight degree of divergence of the feet in symmetrical standing is usual, and probably not harmful. This matter is of such practical importance that a more serious effort should be made to influence the community in favor of the strong posture in standing and walking. The effects of foot postures in standing and walking were summarized as follows: Toeing out throws the weight on the heels, increases pronation, diminishes stability and control, consequently weakens the foot, causes stiff or awkward gait, bad general posture and fatigue. Toeing straight protects the foot, favors efficiency, gives correct general posture and diminished fatigue. Toeing in protects the inner arch, inner ankle and inner knee. All prolonged standing is harmful. It is least harmful when the base is frequently shifted from one foot to the other. The supporting foot should be straight (in the strong posture), that is, point in the direction in which the body weight tends to fall, which is usually forward. When standing with the weight equally on both feet, they should not be markedly turned out.

DISCUSSION.

Dr. E. H. Bradford of Boston said that as a result of investigations made several years ago with reference to foot positions, he had found exactly the same conditions set forth in the paper. In Holland he had noted that the straight-foot position was used, while in London the out-toe position was used. As a result of changes made in the past few years, the United States marines now march and stand in the straight-foot position.

Dr. C. W. Wilson of Montreal said that English troops have in recent years adopted the straight-foot position as the one best suited to the requirements placed upon them.

Dr. L. A. Weigel of Buffalo said that he had made some observations among the native population of Jamaica, where very large loads are carried upon the head, and had found the straight-foot position the one in use. He exhibited a number of photographs taken in natural postures, both standing and walking, and without knowledge on the part of the subjects, showing the straight-foot position.

Dr. R. H. Sayre of New York said that as was well known, practical trainers instructed runners to use the straight foot posture as being the only one by which great speed can be developed.

DR. TAYLOR, in closing, called attention to two drawings made by an artist at his request. The subject of the drawing was a celebrated piece of sculpture showing the straight-foot position. In second drawing the statue was represented in the out-toe position with the accompanying distortion above and the loss of the beauty and poise of the figure. These pictures were designed to illustrate that the strong position is the useful position and also the beautiful position as exemplified by the best art in sculpture and painting.

SPONTANEOUS FRACTURE WITH RICKETS.

DR. HENRY O. FEISS of Cleveland by invitation reported a case of rickets with spontaneous fracture occurring in a child four years of age, presenting all the characteristics of marked rickets. For the purposes of investigation of the rachitic condition, x-ray pictures were taken and three fractures discovered on the arms. There was no history of injury, and the bone fragments were in complete alignment, although the breaks were complete. In a review of the literature, attention was called to a report by M. John, who saw similar fractures combined with rickets, and who regarded the condition as an individual disease, because of the associated mental phenomena and the fact that ordinary rachitic fractures are of the green-stick variety.

DISCUSSION.

DR. R. F. TAYLOR of Baltimore believed that in such a case the question of a condition of rickets associated with osteomalacia should be considered. He had under observation a child which presented evidences of both conditions. There were fractures of the radius and ulna of one forearm, both femora and both tibias. Another case which he saw had had no less than nineteen fractures, with evidences of rickets present.

DR. R. H. SAYRE of New York recalled a case of rickets in which the bones were so extremely fragile that even careful handling of the child resulted in fractures.

DR. PHIL HOFFMAN thought that very likely the case reported was not one of pure rickets, but an association of rickets and osteomalacia. One case under observation for many years was at first regarded as rickets, but later was decided as one of osteomalacia. This case was a female child in whom he believed osteomalacia to be more frequent.

DR. C. W. WILSON of Montreal mentioned a case of knock-knees in which it was found that attempts at correction revealed an extremely soft condition of the bones, being bent with the greatest ease. He believed that in such a case fractures might very easily be induced.

DR. FEISS, in closing, said that the case was regarded as one of pure rickets because of the typical rachitic pathology presented upon gross and microscopical study. The bone changes had been those characteristic of rickets. Osteomalacia would have presented an entirely different pathological appearance, according to most writers on that condition.

AFTERNOON SESSION.

CONGENITAL LUXATION OF THE HEAD OF THE RADIUS.

DR. E. E. BLODGETT of Detroit, by invitation, reported a case of bilateral anterior luxation of the head of the radius occurring in a girl fifteen years of age. Decreased function was first noted when the patient was an infant by her inability to hold a lump of suger in the palm of the hand. Chief complaint at the time of examination by the author was a partial disability in either arm, shown by an inability to grasp objects with the thumb on the upper surface. At one time she had sudden pain in the left elbow upon flexion. This gradually disappeared. The forearms were fixed, in respect to rotary motion, in full prnoation. Flexion and extension were free. Hyperextension beyond straight 16° on left and 20° on the right. The space usually occupied by the head of the radius was vacant. Another case occurred in a boy of six years. Since birth the forearms had been fixed in pronation and extension. Skiagrams showed bilateral anterior luxation of the radial heads. Owing to fixation, the disability was great. The upper end of the radius on either side was excised, and the result showed some improvement eighteen months after operation, but the patient still grasped objects with the thumb underneath.

DISCUSSION.

DR. L. A. WEIGEL of Buffalo said that it was impossible to tell in what plane the radius lay with a flat picture, therefore it was impossible to say from such a picture whether the radius was in an anterior or posterior position. The only sure way would be to resolve the picture into different planes in order to determine what the exact condition was.

DR. BLODGETT, in reply, stated that his reasons for believing the case to be one of anterior dislocation, aside from the evidence afforded by the x-ray, were: (1) The head was plainly palpable in an anterior position; (2) the position which it would normally occupy was vacant; (3) the case conformed as a whole to other reported cases, and (4) the case was analogous in both the general examination and radiographic appearances to other cases in which visual demonstration of anterior luxation of the head was afforded.

(To be continued.)

Recent Literature.

Laboratory Manual of Physiology. By FREDERICK C. BUSCH, B.S., M.D., Professor of Physiology, Medical Department, University of Buffalo. pp. 195. New York: William Wood & Co. 1905.

Professor Busch has presented in this manual instructive experiments in all the main divisions of physiology. The text is devoted largely to methods of procedure; little space is given to descriptions of apparatus or to illustrations. Some of the illustrations that are included, however, are not quite clear. And some of the experiments are so difficult that they must be performed by the instructor as demonstrations. But on the whole the selection of exercises is well suited to train the medical student in methods useful in meeting medical problems, and to give him valuable first-hand acquaintance with physiological facts.

The results and conclusions of the experiments have been omitted. Instead, stimulating questions have been scattered throughout the text to rouse the student's interest and demand his reaction on the matter in hand. A chapter on "Internal Secretions" is novel in a book of this kind, also several experiments illustrating some of the latest and most significant discoveries in physiology.

Manual of Pathology, Including Bacteriology, the Technic of Post-mortems, and Methods of Pathologic Research. By W. M. Late Coplin, M.D., Professor of Pathology and Bacteriology, Jefferson Medical College, Philadelphia; Pathologist to Jefferson Medical College Hospital and to the Philadelphia (Blockley) Hospital; Director of the Clinical Laboratories of the Jefferson Medical College Hospital; Pathologist to the Friends' Asylum for the Insane, Frankford. Fourth edition. Rewritten and enlarged with four hundred and ninety-five illustrations, many of which are original, and ten colored plates. Philadelphia: P. Blakiston's Son & Co. 1905.

The additions and alterations in this edition have made it practically a new work. In its present improved form it is one of the best textbooks on pathology in this or any language, and deserves to find favor with pathologists, students and general practitioners. On many subjects it contains information not found in any other textbook. It is gratifying to know that an American pathology has at last been produced that compares favorably with the classical works of Ziegler, Ribbert and Orth. This treatise covers the whole field of general and special pathology. Additional sections are devoted to post-mortem technique, bacteriological technique and urine and sputum examinations.

We are surprised to find that Weigert's elastic tissue stain and Mallory's connective tissue stain are not described. In speaking of the chemistry of fibrin formation mention should have been made of Morowitz's important studies. Wright's coagulometer is described but nothing is said in regard to the simpler and better apparatus of Brodie and Russell.

In the note on the volume index of the blood it would have been well to have included the results of Capp's investigation.

We have found very few errors in the text. The volume is enriched with a great number of references to original articles. Nearly all are to publications which have appeared since 1900, and they have been carefully selected. The author states that he has cited representative monographs in French, German and English wherever possible.

Physical Diagnosis. By Richard C. Cabot, M.D., Instructor in Medicine in Harvard University. Third edition, revised and enlarged. With five plates and two hundred and forty figures in the text. New York: William Wood & Co. 1905.

This volume represents the third edition of the original issue now for the first time so amplified as to cover such additional fields of physical diagnosis as the author deems essential to the equipment of the working practitioner or, as he puts it, to the "*internist*"; unfortunately, however, he fails to define the latter word and, as it is not acknowledged by the dictionary, one is left in doubt as to why an *externist*, if such there be, might not hope to find the book equally useful, especially since diagnosis for its demonstration depends so preponderantly upon externals. The demand to be met was not for another vast compendium of fact and fancy in the domain of diagnostics, but for a selection of well-tried methods and tests, clearly and briefly described, and guaranteed by the individual experience of a practical investigation. The attempt to supply this demand has given us a well-printed book of 577 pages, admirably done as a whole, but betraying unmistakable evidence of the inevitable problem of where to draw the line in scope; laryngology, ophthalmology, etc., are left out as requiring especial knowledge of expert details, while radioscopy, testing blood tension and matters gynecological, orthopedic and semi-surgical are included. Along paths as divergent as these, even "prolonged use" of methods must result in inequalities of grasp and be reflected in unevenness of treatment, and unquestionably the best part of the book is that which has already stood the test of two editions. To bring the new matter up to the standard quality of the old needs a careful revision, such as the assured demand for further editions will call for. In the present one there is evidence of hasty work here and there, in the arrangement of subject matter, in the proof-reading and now and then in the diction, and if illustrations are sufficient, they are not always judiciously chosen or satisfactorily reproduced, while six figures to demonstrate so simple an instrument as the Bowles stethoscope may be said to border on the superfluous. In the general excellence of the manual, mention of such trifles were invidious if not made with the firm conviction that correction of obvious faults and such changes as may be suggested by use in class work will make it a unique and valuable treatise to teacher and student, both of whom should welcome amongst other virtues the somewhat inconoclastic attitude toward certain heirloom traditions of laboratory infallibility.

Exercises in Practical Physiology. Part II, Exercises and Demonstrations in Chemical and Physical Physiology. By Augustus D. Waller M.D., F.R.S., and W. Legge Symes. pp. 79. London, New York and Bombay: Longmans, Green & Co. 1905.

In this small collection of exercises, chemical and physical experiments on blood, circulation, carbohydrates and salivary digestion, proteids and gastric digestion, fat and pancreatic digestion, milk, bile, muscle, urine and respiration are described *seriatim* for instruction in physiology. Some of the experiments are so difficult or require such complicated apparatus as practically to preclude them from performance by students. The exercises which students can perform are the usual exercises set down in books of this character; the collection has little that is distinctive. Some of the drawings are crude, and one at least is quite lacking in clearness.

THE BOSTON

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THE FORMAL PAPER VERSUS DISCUSSION.

WITH the many changes which are taking place in medical customs and practice, the question of the proper organization of medical meetings and medical congresses appears to be taking a prominent place. It is now very generally acknowledged that much is said at medical meetings of all sorts which might better be omitted for the benefit of those who are obliged to sit and listen. It is unquestionably the fact that papers which are suitable to read before a body of physicians are rarely of great value as a published expression of opinion. On the other hand, it is still more true that papers which find an important place in medical literature are rarely suitable in unmodified form for presentation at medical meetings. The difficulty is being grappled with in various ways, the most significant of which is a sharp limitation of a reader's time to perhaps twenty minutes, and a similar limitation of those who take part in the discussion to five minutes. This is a valuable reform but it does not completely accomplish its purpose. Twenty minutes is far too long a time to give over to the reading of a paper which it is impossible to understand, and to waste even five minutes in useless discussion is equally unfortunate. Papers should be written in such a way that they may be interesting to the hearers. This could be done were writers willing to discuss general principles and give conclusions rather than to narrate details of cases or investigations. Discussion could also be improved if it were given a place of importance, and if the speakers understood that they were expected to say something of importance and not merely take time, out of respect to the reader of the paper.

Various reforms have been attempted with partial success. It has been urged on the one hand that discussion is for the most part worthless, and that what the body of physicians wish is a presentation in didactic form of the progress of medicine. This reduces the medical meeting to something approaching a lecture. As such it no doubt has its place, but it falls far short of that ideal of a medical meeting which should imply first of all a free interchange of opinions.

The other extreme is represented by those equally thoughtful men who insist that the presentation of formal papers is unnecessary and irksome to the hearers; that it is impossible to concentrate the attention on the subject, and that the barest results are alone worthy of presentation. To these reformers the discussion takes first place. They maintain, with considerable reason, that the medical meeting should be designed to bring out the diverse opinions of various men, presumably equally competent to take part in the discussion, that formality should be laid aside, and that wearisome detail on the part of the original reader should find absolutely no place in the program. The same points of view apply to the organization of a congress as to the organization of a series of medical meetings, but perhaps even in a greater degree. At certain large gatherings of medical men the edict has gone forth that no paper shall be read from manuscript on the ground that the expounder of a subject should be able to give his conclusions with greater interest and with less burden to his hearers, extemporaneously. This is, in general, to be approved, but it must be confessed the rule cannot be made absolutely general. It is not, however, to be questioned that the large congress suffers in efficiency through the reading of innumerable papers which add nothing to the general subject and which so weary the audience that they are in poor spirit to respond to the valuable paper when it ultimately emerges.

Our contemporary, the London *Practitioner*, well expresses the feelings of that wing of the profession which would do away with papers and fall back almost completely on discussion. In a recent number it comments feelingly on the subject in the following words:

"That the congress is a useful institution in its way can scarcely be denied. That it is too much with us, however, at the present day is past question. Not only are there too many congresses, but some of them at least have become

so unwieldy, that they are in danger of perishing of their own bulk. One fatal flaw in organization runs through them all, and that is the needless waste of time caused by the reading of long papers. This might easily be remedied, at least to some extent, by having the papers or reports with which discussions are to be introduced printed beforehand and circulated among members. At the meeting these might be taken as read, and the discussion on the points raised in them might begin at once. Discussion is the very breath of life of a congress; papers can be read at home, but it is in debate that new truths are struck from the shock of mind against mind. There should be a time limit for speakers, and this should be enforced with impartial strictness. Irrelevancy and twaddle should be sternly ruled out by the president, who should be formally vested with powers for the purpose, subject to an appeal to the meeting if they are too arbitrarily exercised. At the Tuberculosis Congress, held in Paris last October, the reading of reports occupied the greater part of each sitting, and the audience was thus very much in the position of a congregation doomed to listen to a series of sermons without the opportunity of reply. We venture to call the attention of the organizers of the congress which is to be held at Washington to the simple reform here suggested. It is applicable to all congresses, for at all scientific assemblies the drone of the reader is so predominant that the living voice of discussion has little chance of making itself heard."

In this, as in many other matters, it is difficult to generalize. Certain meetings without discussion are no doubt useful, and certain others where discussion takes chief place are equally essential. It would be highly unfortunate were either extreme adopted completely; it behooves us to see the advantages of each, but we are convinced that properly regulated discussion should be the soul of a medical gathering of any sort.

ARE WE ATTEMPTING TO TEACH TOO MUCH?

In our issue of Dec. 14 we commented editorially upon a recent address by Sir Dyce Duckworth on the decline of art in medicine. It is not surprising that his somewhat radical point of view has excited considerable discussion, particularly in British medical journals. The modern medical teacher resents the idea that he is preparing his students less well for medical practice than his predecessors in the middle of the last century. As we before suggested, it seemed to us that Sir Dyce was possessed by an idea which carried him to an extreme. In a recent number of the London *Lancet* Mr. R. Brudenell Carter takes up the cudgels and, while agreeing in a measure with Sir Dyce's point of view, finds therein much to criticise. Admitting Sir Dyce's chief contention that the art of medicine is declining, he finds the cause not in an excess of scientific training, but rather in a defect in observation which certain modern so-called instruments of precision have brought about. Take the pulse, for example; in the years gone by the student was taught under careful supervision to examine and study the pulse with the most extreme care. Now the sphygmograph is substituted and various other instruments supposedly more accurate than the sense of touch. The thermometer also comes in for a mild criticism on the same basis. We might also, in passing, allude to the first result of the use of the x-ray, which appeared to render the diagnosis of fractures easy even without the time-honored methods of clinical observation.

This point, in general, we believe is well taken. It is perfectly evident to any teacher of experience that one of the modern tendencies is to overlook the ordinary facts of observation on the ground that an instrument will prove a more exact criterion of the condition under investigation. If the art of medicine consists in the use of observation unaided, we willingly admit that it has suffered in modern development. The difficulty, however, lies not with the instruments, but with the stress laid upon their usefulness. It is no doubt still possible to teach the modern student observation and yet allow him the freest possible use of instruments of precision. The difficulty must, however, be recognized.

Mr. Carter, however, shares our conviction that physical science as taught in medical schools can by no means be subordinated to what Sir Dyce calls the "art of practice." This we discussed before, expressing there our feeling that even if the physician of the future is to be different from his predecessor he will, on the whole, through his wider and deeper training, be a more useful man to the community. We quote the following from Mr. Carter's remarks, as expressive of a further situation which must be taken into full account in the medical curriculum of the future:

"With reference to the major portion of Sir Dyce Duckworth's only too well-founded complaints, I would suggest that greater care should be taken with what I would describe as the elements or rudiments of clinical instruction, and that there should be less haste in endeavoring to carry the student beyond these elements into the higher regions of diagnosis and of treatment. For such a reform a longer period of study than is now required would no doubt be necessary, but the results ought to be of more than equiva-

lent value. We are apt to forget that the total duration of the medical curriculum was greatly shortened by the abolition of apprenticeship and that it has not been restored to its original length. My contemporaries were apprenticed for five years and had then three winter and two summer sessions at a hospital — a total of seven and a half years. During the apprenticeship we learned not only pharmacy and something of the elements of the physical science of the day, but also, and although slowly and gradually often very thoroughly, much of what I have called the elements of clinical observation, and the seeds of our instruction fell into deep furrows. The schools of the present day are attempting, as it seems to me, to crowd too much work into a limited period, and such an attempt can only lead to disastrous failure."

The tendency alluded to in the last sentence is perfectly apparent. There is, at present, in our medical schools a feverish desire to instil the newest knowledge into the student's mind, but to accomplish this end means a dissipation of energy which does not conduce to the best development. In much of our present-day teaching too much is taken for granted; it is assumed that the student is familiar with fundamentals, and the time is taken up with the refinements of diagnosis to the positive detriment of his actual knowledge. He is submerged in details, the actual significance of which is too often vague and meaningless. What we need in the immediate future is an insistence upon essentials in our medical teaching. We are continually in danger of falling into the error of attempting to teach too much, rather than too little. We need to cultivate perspective, and to consider with increasing care the relative importance of the multiplying subjects of the curriculum. If this be conscientiously done, there will be small danger that the final product will be less fit to practise medicine than the graduates of the old régime.

THE YEAR'S END.

THE last week of a year may, according to time-honored custom, direct one's thoughts to past accomplishment and to future possibilities. From the standpoint of medical progress the year about closing has not been remarkable in striking discoveries. It is not, however, to be supposed that work of a valuable sort has not been accomplished on the basis of theories which previous years have brought to the front. The question of the etiology of cancer remains unanswered, although assiduous investigation has been going on regarding it in various laboratories throughout the world. Little new has been discovered regarding tuberculosis, but probably no subject has commanded greater interest of a greater number of persons than this. The practical efforts to combat tuberculosis have spread widely throughout civilized countries with the result that provision has been made for this disease which is sure to ameliorate conditions in the immediate future. The work on tuberculosis foreshadows the possibility that an era of the practical application of our knowledge may be about to succeed the somewhat theoretical discussions of the past years. It is a noteworthy fact that during the last year there has been a definite falling off in the number of medical students, not only in this country but in Europe. Reasons for this are no doubt complex as we have previously had occasion to suggest, but we cannot doubt that the result will be a higher grade of general attainment on the part of those who take up the profession and prosecute it to the end. In general, we may look forward to the new year with assurance that the prospects for the development of medicine in the broadest sense were never so bright as now and that progress will inevitably be made toward combating disease, as well as toward investigating its cause.

MEDICAL NOTES.

DEATH OF ERNST ZIEGLER, M.D. — The death of Prof. Ernst Ziegler is announced, at the age of fifty-six. He has for many years been professor of pathology and pathological anatomy in Freiburg in Breisgau. An obituary notice will follow.

LECTURES AT THE LINCOLN HOSPITAL, NEW YORK. — Dr. Louis Faugeres Bishop will give a series of clinical lectures in the medical wards of the Lincoln Hospital, with special reference to disorders of the heart and circulation and the commoner diseases occurring in general practice. These lectures are free to the medical profession and will be given Wednesday afternoons beginning Dec. 27, at two o'clock.

THE NATIONAL ASSOCIATION FOR THE STUDY AND PREVENTION OF TUBERCULOSIS. — Announcement is made by the Board of Directors of the National Association for the Study and Prevention of Tuberculosis of the preliminary arrangements for the second annual meeting of the Association which will be held in Washington, May 17, 18 and 19, 1906. Two new sections have been established, one on Surgical Tuberculosis and the other on Tuberculosis in Children. The officers of the sections are as follows: Sociological

Section: Chairman, Mr. William H. Baldwin, Washington, D. C.; Secretary, Miss Lilian Brandt, New York. Clinical and Climatological Section: Chairman, Dr. Vincent Y. Bowditch, Boston, Mass.; Secretary, Dr. Edwin A. Locke, Boston, Mass. Pathological and Bacteriological Section: Chairman, Dr. Edward R. Baldwin, Saranac Lake, N. Y.; Secretary, Dr. Hugh M. Kinghorn, Saranac Lake, N. Y. Section on Surgical Tuberculosis: Chairman, Dr. W. W. Keen, Philadelphia, Pa.; Secretary, Dr. Robert G. Leconte, Philadelphia, Pa. Section on Tuberculosis in Children: Chairman, Dr. W. P. Northrup, New York; Secretary, Dr. Roland G. Freeman, New York.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, Dec. 27, 1905, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 43, scarlatina 43, typhoid fever 17, measles 139, tuberculosis 25, smallpox 0.

The death-rate of the reported deaths for the week ending Dec. 27, 1905, was 17.79.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, Dec. 23, 1905, was 192, against 198 the corresponding week of last year, showing a decrease of 6 deaths and making the death-rate for the week 16.82. Of this number 113 were males and 79 were females; 187 were white and 5 colored; 118 were born in the United States, 66 in foreign countries and 8 unknown; 42 were of American parentage, 125 of foreign parentage and 25 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 64 cases and 1 death; scarlatina, 46 cases and 1 death; typhoid fever, 27 cases and 3 deaths; measles, 129 cases and 5 deaths; tuberculosis, 27 cases and 16 deaths; smallpox, no cases and no deaths. The deaths from pneumonia were 46, whooping cough 1, heart disease 22, bronchitis 6 and marasmus 5. There were 13 deaths from violent causes. The number of children who died under one year was 33; the number under five years, 87. The number of persons who died over sixty years of age was 40. The deaths in public institutions were 58.

Librarian, Boston Medical Library. — At a recent meeting of the Boston Medical Library, Dr. John W. Farlow was elected librarian to succeed the late Dr. James R. Chadwick.

Bequest to the Harvard Medical School. — By the will of the late Dr. George S. Hyde the Harvard Medical School becomes a beneficiary in the amount of $50,000. This money reverts to the college on the death of two near relatives and is unrestricted.

Centenarians. — Mrs. D. H. Johnson, reputed to be one hundred years old, died Dec. 24 in Florence, Mass. She was the daughter of Aaron Hall who served as a soldier in the War of the Revolution. Mrs. Maria P. Johnson died in Milford, Mass., Dec. 25, at the reputed age of one hundred and one. She was descended from a family whose members served in the Revolutionary Army. She married a soldier and two of her sons took part in the Civil War.

Tuberculosis Exhibition. — We have before commented editorially on the tuberculosis exhibition which is now being held in Horticultural Hall in Boston. The exhibition began Dec. 28 and will continue until Jan. 7. It is desired to create a widespread interest in this exhibition and in its purposes to the end that it may reach the largest number of persons possible. A special meeting will be held Saturday, Dec. 30, at three o'clock, at which the subject of the duty of the physician regarding tuberculosis will be discussed. This meeting will be under the chairmanship of Dr. Arthur T. Cabot, President of the Massachusetts Medical Society. The place of meeting has been changed from Faneuil Hall to Horticultural Hall, corner of Massachusetts and Huntington avenues. The program is as follows: Thursday, Dec. 28, 8 P.M. Formal opening of the exhibition. Dr. H. P. Walcott, Chairman of the Massachusetts State Board of Health, will preside. The exhibition will be formally opened by the Hon. Curtis Guild, Governor-elect of the Commonwealth. Address by Talcott Williams, Esq., of Philadelphia. Friday, Dec. 29, 8 P.M. "The Employer's Opportunity," Gen. Thomas Sherwin, president of the New England Telephone and Telegraph Company, chairman. Saturday, Dec. 30, 3 P.M. Dr. Arthur T. Cabot, president of the Massachusetts Medical Society, chairman. "The Duty of the Physician Regarding Tuberculosis." Sunday, Dec. 31, 3 P.M. John F. Tobin, general president of the Boot and Shoe Workers' Union, chairman. "Tuberculosis and the Workingman." Monday, Jan. 1, 2 P.M. Robert A. Woods, Chairman. "The Opportunity of Philanthropy." Tuesday, Jan. 2, 3 P.M. Dr. Edward O. Otis, chairman. "Tuberculosis Societies." Wednesday, Jan. 3, 3 P.M. Dr. Samuel H. Durgin,

chairman. "Boards of Health and their Responsibilities." Thursday, Jan. 4, 7.45 P.M. Dr. Vincent Y. Bowditch, chairman. "The Opportunity of the Trained Nurse." Friday, Jan. 5, 3 P.M. Dr. Charles W. Page, superintendent Danvers Insane Hospital, chairman. "Tuberculosis in Institutions." Saturday, Jan. 6, 3 P.M. George H. Martin, secretary State Board of Education, chairman. "The Opportunity of the Teacher in the Prevention of Tuberculosis." Sunday, Jan. 7, Public Meetings. 2.30 P.M., Mr. Samuel H. Borofsky, chairman; 4.30 P.M., Dr. Rocco Brindisi, chairman; 8 P.M., program to be announced.

NEW YORK.

GIFTS TO SANITARIUM FOR HEBREW CHILDREN. — Jacob H. Schiff has given $10,000 and Adolph Lewisohn and Mortimer Schiff each $2,500, for the new building of the Sanitarium for Hebrew Children at Rockaway Park, on the Long Island seashore.

APPOINTMENT OF DR. D. T. MACDOUGAL. — Dr. Daniel T. MacDougal, assistant director of the New York Botanical Gardens, has accepted an appointment as director of the new department of botanical research of the Carnegie Institute, and is to have charge of the Desert Botanical Laboratory at Tucson, Ariz.

BEQUESTS. — By the will of the late John Sloane of New York $65,000 is bequeathed to religious and charitable objects. Of this amount $20,000 is left to the Presbyterian Hospital to be used at the discretion of the hospital authorities. An additional $10,000 is left to this hospital for the establishment of free beds in memory of his father, and of his brother, Thomas Chalmers Sloane.

A NOVEL METHOD OF TREATMENT. — A novel method of treating disease was brought to light in the trial of Lena Goldstein, who, in the Court of Special Sessions, was recently sentenced to a fine of $250, or imprisonment for sixty days in the Tombs, for practising medicine illegally. A woman detective of the County Medical Society testified that the defendant had smeared the body of a supposed patient with raw eggs, telling her that the disease had been transferred from her person to the eggs.

ADMINISTRATION BUILDING, HEALTH DEPARTMENT OF BROOKLYN. — On Dec. 22, Health Commissioner Darlington approved and accepted the architects' plans for the administrative building of the Health Department in Brooklyn, for which the Board of Estimate and Apportionment has appropriated $295,000. It is to be constructed of white marble, and will stand on terraced ground with wide lawns on all sides of it. It will face on four streets, and besides the administrative offices there will be a clinic, laboratory and stable. In the basement will be a vault for records, an isolation ward, disinfecting rooms and the power plant. On the first floor will be the statistical department, public waiting rooms and vaccination and school certificate rooms. On the second floor will be the clinic (presumably for tuberculosis cases), examination, x-ray, drug and prescription rooms, inspectors' office and laboratory. The third floor will be devoted to various offices. The fourth floor, besides offices, will contain assembly and lecture rooms, and the fifth floor will be used for storage and work rooms.

APPROPRIATION OF TWELVE THOUSAND DOLLARS FOR SYDENHAM HOSPITAL. — The Sydenham Hospital, in Harlem, has received an appropriation of $12,000 from the city, and among other recent gifts to it is $20,000 for current expenses from Isaac Guggenheim. Mr. Guggenheim has also offered $250,000 toward the erection of a new building, provided the hospital authorities, within a reasonable time, raise an endowment fund of equal amount. This hospital, which was established two years ago in temporary quarters, with six beds, now has 86 beds, 70 of which are free. The first annual commencement of the training school connected with the institution was recently held, when two nurses were graduated.

Obituaries.

NATHAN BOZEMAN, M.D.

DR. NATHAN BOZEMAN, of New York, died on Dec. 16 from the effects of an attack of cerebral apoplexy, which occurred one week before his death. He was eighty years of age, and was born in Butler County, Ala. He was graduated from the Louisville Medical College in 1848, and first practised at Montgomery, Ala., where he achieved an international reputation as a gynecological writer and surgeon. Later he was called upon to operate in difficult cases in Paris, London, Edinburgh, Glasgow and Dublin. For a number of years he maintained a private hospital in New Orleans, and during the Civil War he was in the Confederate service as a member of the Examining Board of Army Surgeons. The later portion of his professional career was spent in New York

City, and about five years ago he retired from active practice. Dr. Bozeman was one of the pioneers in operative gynecology in this country. He was a man of great originating powers and inventive facility, and possessed unusual skill in operating. He was especially successful in the treatment of such lesions as vesico-vaginal fistula, and was among the first to catheterize the ureters. Most of his writings were devoted to descriptions of his peculiar methods of operating, the principles on which they were based and their technique, and to reports of cases in which these were successfully carried out. He was at one time associated with the late J. Marion Sims, and after he came to New York he served for a considerable time as one of the four chief surgeons to the Woman's Hospital, which was founded by Dr. Sims in 1855 and afterwards became known throughout the world as a fountain-head of gynecological achievement. The other famous surgeons associated with Dr. Bozeman were T. Gaillard Thomas, Edmund R. Peaslee and Thomas Addis Emmet. He married a sister of Senator Lamar, who was a member of President Cleveland's first cabinet. She and an only daughter have been dead for a number of years, and he is survived by a son, Dr. Nathan Gross Bozeman, a well-known gynecologist in New York.

EZRA HERBERT WILSON, M.D.

DR. EZRA HERBERT WILSON, director of the Hoagland Laboratory, Long Island College Hospital, and one of the most eminent pathologists of Brooklyn, N. Y., died on Dec. 19, in his forty-eighth year. He was a native of Port Jefferson, Suffolk County, N. Y., and was graduated from the College of Physicians and Surgeons, in New York, in 1882. He was for many years in the service of the Brooklyn Board of Health, and up to the time that that city was consolidated with New York he had charge of the manufacture of all diphtheria antitoxin used by the Health Department, establishing throughout the city stations for its distribution and for typhoid cultures. While Dr. Sternberg was surgeon general he also did much work, in the line of bacteriological investigation, for the medical department of the United States Army. Indeed, he achieved an international reputation as a bacteriologist, and was an esteemed Fellow of the Royal Microscopical Society of England. At the time of his death, in addition to his appointment at the Hoagland Laboratory, he was consulting pathologist to St. Mary's and the Kings County Hospitals.

OLIVER A. BLUMENTHAL, M.D.

DR. OLIVER A. BLUMENTHAL, of Syracuse, N. Y., a prominent specialist in diseases of the throat and chest, died at Saranac Lake, in the Adirondacks, on Dec. 21. He was thirty-five years of age and was graduated from the College of Medicine, Syracuse University, in 1893. In 1893–94 he pursued post-graduate courses of study in Berlin and Vienna, and in 1896, in Berlin and Würzburg. Among the positions which he held were those of consulting physician for diseases of the chest to the State Institution for Feeble Minded Children at Syracuse and director of the National Jewish Hospital for Consumptives at Denver, Colo. Dr. Blumenthal was a member of the British Congress on Tuberculosis held in London in 1901, and much of his professional life was devoted to the subject of pulmonary tuberculosis, to which disease he, himself, unfortunately fell a victim. Some time since he started in Syracuse a free dispensary for indigent consumptive patients, but, much to his disappointment, it had to be given up, owing to lack of support.

Miscellany.

SURGEONS AND BARBERS.

AN interesting ceremony, reminiscent of the fraternity which existed for centuries between surgeons and barbers, took place on Dec. 5 in the hall of the Ancient Guild of Barbers in the City of London. At a Court of Assistants then held, Mr. John Tweedy, president of the Royal College of Surgeons of England, was admitted to the freedom and livery of the company. The list of Masters of the London Guild of Barber Surgeons from the year 1308 is still extant. When the union between the crafts was dissolved by Act of Parliament in 1745, the Barbers' Company retained possession of the old hall, together with the corporate property, plate, pictures and records, while the surgeons were made a separate company. About the end of the eighteenth century this body inadvertently committed hara-kiri by a violation of its constitution. In a year or two it rose from its ashes as a college, and thus the last link connecting surgery with trade was broken. The Barbers' Hall is an interesting place in itself. It was built by Inigo Jones in 1636, and by good fortune escaped the great fire of London in 1706. Its walls are adorned with historic pictures of Vandyke, Sir Peter Lely, Sir Joshua Reynolds and Gainsborough, but the barbers' chief artistic treasure is Holbein's famous picture of Henry VIII giving a charter to the barber surgeons. The figures are mostly portraits of the leading physicians and surgeons of that day. The company has also some very choice old plate, notably the Tudor Grace Cup and Cover (plate mark, 1519), presented by Henry VIII; the Royal Oak Cup, presented by Charles II in commemoration of his escape at Boscobel, and a large silver punch bowl given by Queene Anne. The admission of the president of the College of Surgeons was made the occasion of a "city feast." In responding to the toast of "The Junior Livery Man" Mr. Tweedy spoke with pride and pleasure of his association with the guild and the hall which had once been the home of so many of his illustrious predecessors. — *Medical News.*

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, DEC. 16, 1905.

CITIES.	Population. Census, 1905.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diphtheria and croup.	Typhoid Fever.	Diarrheal Diseases.
New York		1,289	351	19.62	20.48	2.32	1.32	1.70
Chicago		489	133	20.86	16.56	2.24	.82	3.07
Philadelphia		509	130	20.23	19.64	2.55	1.96	3.34
St. Louis		—	—	—	—	—	—	—
Baltimore		195	43	18.97	17.43	.51	1.53	2.56
Cleveland		—	—	—	—	—	—	—
Buffalo		—	—	—	—	—	—	—
Pittsburg		—	—	—	—	—	—	—
Cincinnati		—	—	—	—	—	—	—
Milwaukee		—	—	—	—	—	—	—
Washington		—	—	—	—	—	—	—
Providence		52	11	13.46	17.31	3.85	1.92	1.92
Boston	595,380	185	70	14.59	25.40	1.08	1.08	1.08
Worcester	128,135	39	13	12.79	10.34	—	5.45	5.45
Fall River	105,762	38	17	23.68	21.05	2.63	—	5.26
Cambridge	97,434	15	5	6.67	20.00	6.67	—	—
Lowell	94,889	37	10	13.51	24.32	2.70	—	2.70
Lynn	77,042	28	8	3.57	7.14	—	3.57	—
New Bedford	74,202	29	9	10.35	—	31.03	3.45	—
Springfield	73,540	19	2	10.53	21.05	—	—	—
Lawrence	70,050	24	5	29.17	29.17	—	4.17	—
Somerville	69,272	19	2	10.53	21.05	—	5.26	—
Holyoke	49,694	14	3	7.14	35.71	7.14	—	—
Brockton	47,794	10	2	20.00	—	—	—	—
Malden	38,037	12	4	16.67	8.33	—	—	—
Haverhill	37,630	7	—	28.57	14.29	14.29	—	—
Salem	37,027	14	3	28.57	14.29	—	7.14	7.14
Chelsea	37,289	14	5	21.43	7.14	—	—	—
Newton	36,827	7	4	14.29	28.57	—	—	—
Fitchburg	35,021	8	3	—	12.50	—	—	—
Taunton	30,967	11	3	18.18	18.18	9.09	—	—
Everett	29,111	7	4	28.57	—	14.29	—	—
Quincy	28,076	8	3	25.00	25.00	25.00	—	—
Waltham	26,282	10	1	20.00	10.00	—	10.00	—
Gloucester	26,011	—	—	—	—	—	—	—
Pittsfield	25,001	7	—	14.29	—	—	14.29	—
Brookline	23,129	6	—	16.67	—	—	—	—
North Adams	23,150	4	0	—	25.00	—	—	—
Chicopee	20,191	7	1	—	42.86	—	—	—
Northampton	19,957	8	0	25.00	—	—	—	—
Medford	19,686	2	—	—	50.00	—	—	—
Beverly	18,223	3	—	—	33.33	—	—	—
Newburyport	14,575	5	0	20.00	—	—	—	—
Hyde Park	14,510	3	1	33.33	—	33.33	—	—
Woburn	14,402	6	3	—	66.67	—	—	—
Leominster	14,297	—	—	—	—	—	—	—
Melrose	14,293	1	0	—	—	—	—	—
Marlboro	14,073	2	0	—	—	—	—	—
Westfield	13,611	3	—	33.33	—	—	—	—
Clinton	13,105	3	1	33.33	—	—	—	—
Peabody	13,098	—	—	—	—	—	—	—
Attleboro	12,702	—	—	—	—	—	—	—
Revere	12,626	5	2	—	20.00	—	—	—
Adams	12,466	2	1	50.00	—	—	—	—
Milford	12,108	—	—	—	—	—	—	—
Gardner	12,012	—	—	—	—	—	—	—
Weymouth	11,585	1	0	—	—	—	—	—
Framingham	11,548	—	—	—	—	—	—	—
Watertown	11,386	—	—	—	—	—	—	—
Plymouth	11,119	—	—	—	—	—	—	—
Southbridge	11,000	2	2	—	50.00	—	—	—
Wakefield	10,368	—	—	—	—	—	—	—
Webster	10,018	—	—	—	—	—	—	—

Deaths reported, 3,149; under five years of age, 853; principal infectious diseases (smallpox, measles, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption), 622; acute lung diseases 605, consumption 339, scarlet fever 14, whooping-cough 5, cerebrospinal meningitis 21, smallpox 0, erysipelas 8, puerperal fever 11, measles 31, typhoid fever 45, diarrheal diseases 67, diphtheria and croup 78.

From whooping cough, New York 2, Baltimore 1, Fall River 1, Brockton 1. From scarlet fever, New York 4, Chicago 1, Philadelphia 3, Baltimore 2, New Bedford 3, Brookline 1. From cerebrospinal meningitis, New York 17, Philadelphia 1, Providence 1, Boston 1, Worcester 1. From erysipelas, New York 5, Chicago 2, Philadelphia 1. From typhoid fever, New York 17, Chicago 4, Philadelphia 10, Baltimore 3, Providence 1, Boston 2, Worcester, Lynn, Lawrence, New Bedford, Somerville, Salem, Waltham and Pittsfield 1 each. From measles, New York 5, Chicago 5, Philadelphia 5, Baltimore 1, Boston 3, Lowell 1, New Bedford 11. From diphtheria and croup, New York 30, Chicago 11, Philadelphia, 13, Baltimore 1, Providence 2, Boston 2, Quincy 2, New Bedford 9, Fall River, Lowell, Cambridge, Holyoke, Haverhill, Taunton, Everett and Hyde Park 1 each.

In the seventy-six great towns of England and Wales, with an estimated population of 15,609,377, for the week ending Dec. 9, 1905, the death-rate was 16.1. Acute diseases of the respiratory organs (London) 192, whooping cough 80, diphtheria 52, measles 110, smallpox 0, scarlet fever 55.

The death-rate ranged from 7.0 in Hastings to 25.8 in Bootle; London 16.3, West Ham 11.3, Brighton 10.2, Southampton 20.4, Plymouth 18.4, Bristol 14.7, Birmingham 18.2, Leicester 12.6, Nottingham 16.0, Birkenhead 18.0, Liverpool 23.6, Wigan 10.8, Bolton 14.3, Manchester 15.5, Salford 13.5, Halifax 12.0, Bradford 17.8, Leeds 18.7, Hull 11.5, Sheffield 14.7, Newcastle-on-Tyne 17.5, Cardiff 16.2, Rhondda 16.3, Merthyr Tydfil 14.8, Kings Norton 9.0, Rochdale 16.9.

METEOROLOGICAL RECORD.

For the week ending Dec. 16, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

DATE	Barometer.	Thermometer.			Relative humidity.			Direction of wind.		Velocity of wind.		Weather*		Rainfall in inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A.M.	8.00 P.M.	Daily mean.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	
S. 10	29.48	28	37	18	94	53	73	N	N W	20	20	S.	O.	.23
M. 11	29.72	24	32	15	87	84		W	S	7	8	O.	O.	T.
T. 12	29.98	24	28	20	91	95	92	N	N W	6	8	O.	O.	T.
W. 13	30.02	32	44	20	81	69	70	W	W	10	9	O.	O.	0
T. 14	30.37	34	36	13	90	58	86	W	N	10	18	O.	O.	0
F. 15	30.53	16	23	8	87	64	76	N	N	12	17	F.	O.	T.
S. 16	30.34	28	32	20	71	75	73	N	N	15	9	O.	O.	T.
Sum	30.05		33	16			75							.23

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; X., below zero. † Indicates trace of rainfall. Sum Means for the week.

SOCIETY NOTICE.

BOSTON MEDICAL LIBRARY MEETINGS IN CONJUNCTION WITH THE SUFFOLK DISTRICT BRANCH OF THE MASSACHUSETTS MEDICAL SOCIETY. — Meeting, Wednesday, Jan. 3, 1906, at 8.15 P. M., John Ware Hall. Subject, "The Secret Nostrum Evil." Papers: 1. Dr. Frank Billings, of Chicago, "The Secret Nostrum Evil in its Relation to the Medical Journal and the Physician." 2. Dr. Frank G. Wheatley of North Abington, House Chairman of the Committee on Public Health, Massachusetts General Court, 1904-5, "Ready-made Remedies." Discussion opened by Drs. David W. Cheever, James C. White and Morton Prince.

RICHARD C. CABOT, M.D., *Chairman.*
EDWIN A. LOCKE, M.D., *Secretary.*

RECENT DEATHS.

DR. THOMAS Y. ABY has recently died in New Orleans, at the age of sixty-five. During the Civil War he served as a surgeon in the Confederate Army and again, in our recent war with Spain, he was surgeon of the Twentieth United States Infantry and was present at the battle of Santiago.

DR. JOHN M. RAND, one of the best known physicians of Newark, N. J., died suddenly on Dec. 18. He was seventy-two years old, and a graduate of Harvard. He was graduated from the Dartmouth Medical School in 1838. During the Civil War he served in the medical department of the Federal Army, and became chief surgeon of the Twenty-fifth Army Corps.

BOOKS AND PAMPHLETS RECEIVED.

Lectures upon the Principles of Surgery. Delivered at the University of Michigan. By Charles B. Nancrede, A.M., M.D., LL.D. With an Appendix containing a Résumé of the Principal Views held concerning Inflammation. By William A. Spitzley, A.B., M.D. Second edition, thoroughly revised. Illustrated. Philadelphia and London: W. B. Saunders & Co. 1905.

A Manual of the Practice of Medicine. Prepared especially for Students. By A. A. Stevens, A.M., M.D. Seventh edition. Revised. Illustrated. Philadelphia and London: W. B. Saunders & Co. 1905.

University of California Publications. Physiology. On the Influence of Electrolytes upon the Toxicity of Alkaloids (Preliminary Communication). By T. Brailsford Robertson. Berkeley. 1905.